

7.17.
GEOLOGICAL AND NATURAL HISTORY SURVEY OF CANADA.
ALFRED R. C. SELWYN, C.M.G., LL.D., F.R.S., F.G.S., DIRECTOR.

CATALOGUE
OF
CANADIAN PLANTS.

PART V.—ACROGENS.

BY
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PREFACE.

PART V.

In the Preface to Part IV. it was stated that Part V. would include the ferns and their allies and also the Musci and Hepaticæ. The addendum to the Parts already published had grown so large, however that it was thought better to change our expressed intention, and in the Part now issued—which completes Volume II.—we include an addendum bringing the Parts already published up to date. Part VI. will be published during the ensuing year, and it will include the Characæ, Musci, and Hepaticæ, about 1000 species in all.

Since the publication of Part IV., we have made collections on Prince Edward Island, and on the mainland of British Columbia, as far east as the summit of the Gold Range; Dr. G. M. Dawson collected in British Columbia in 1888-9, and Jas. M. Macoun on the Athabasca, Clearwater, and Upper Churchill rivers in 1888, the results of those collections have been embodied in this Part. A number of collectors whose names will appear in the addendum have assisted me with notes and specimens, and to them hearty thanks are returned, and it is hoped that they and others will continue the good work. Communication has been kept up with specialists both in Europe and America, and the addendum will show the good results obtained.

Dr. Sereno Watson has examined many critical species, and has been of great assistance in many instances. Dr. N. L. Britton, of Columbia College, New York, has critically examined numerous genera, and is at present at work on others. Prof. Trelease, Director, of the Shaw School of Botany, St. Louis, has examined our Geraniacæ and various difficult genera, and Professors Coulter and Rose the whole of our Umbellifera, adding many new species and changing considerably the

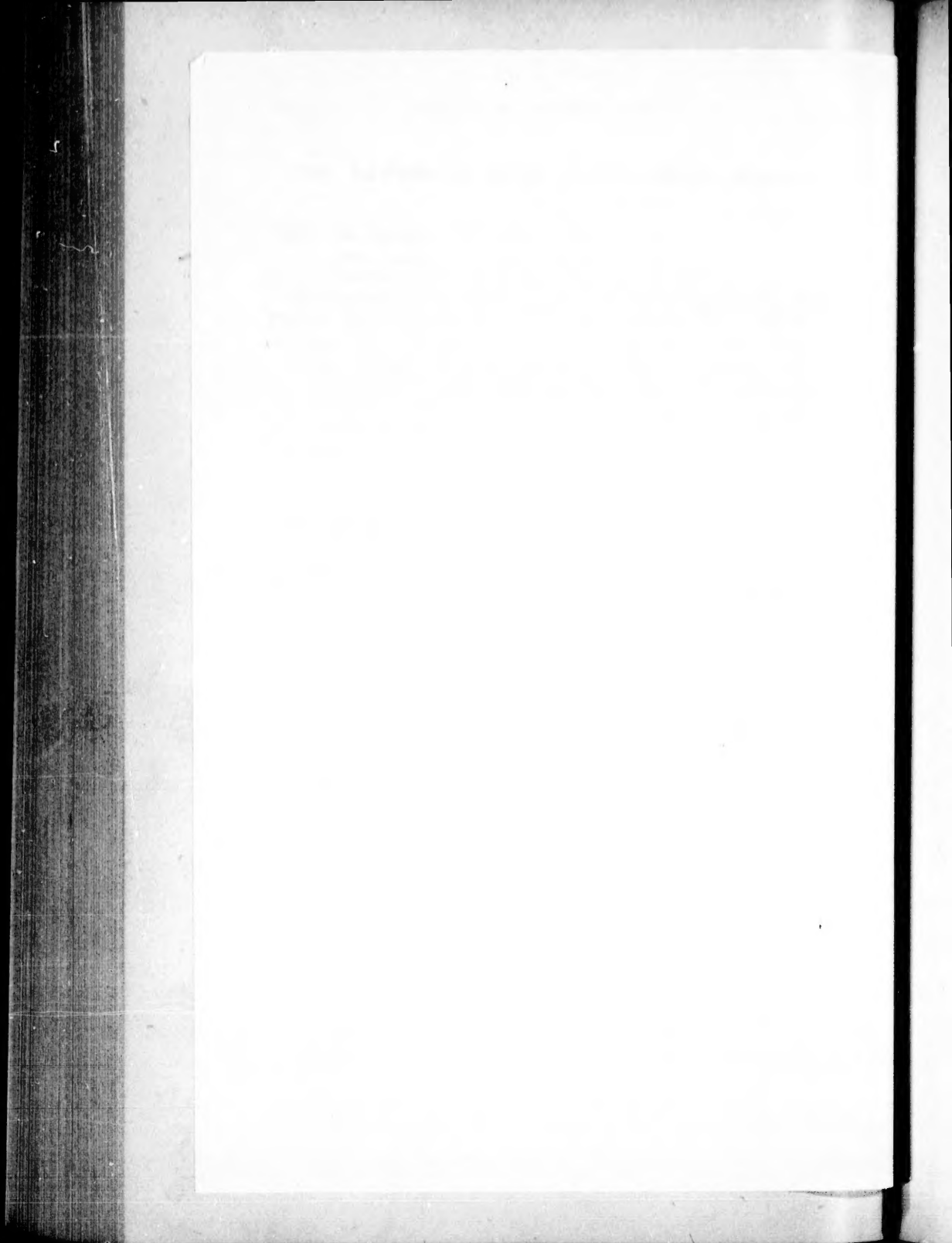
nomenclature. Mr. M. S. Bebb, of Rockford, Ill., has examined all our Willows and revised the nomenclature, much of that part of the addendum referring to the Willows being his work. Messrs. Bennett and Beeby have continued their work, and named our Potamogetons and Spargania. We have been enabled to make the changes in, and additions to, the genus *Carex*, by the use of Prof. Bailey's Memoir, published by the Torrey Botanical Club, and by his examination of our specimens collected during the past two years. Prof. F. Lamson Scribner has determined all the grasses collected in British Columbia in 1889, and other critical species. The changes and additions in the order Gramineæ, are either his or have been made at his suggestion. Dr. T. J. W. Burgess, our highest authority on Canadian Ferns, has prepared the orders Ophioglossaceæ and Filices.

JOHN MACOUN.

OTTAWA, May, 1880.

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ACROGENS.

CXIX. EQUISETACEÆ. HORSE-TAIL FAMILY.

737. EQUISETUM, Linn. (SCOURING RUSH.)

(2956.) **E. Telmateia**, Ehrh. Great Horsetail.

E. fluviatile, Linn. Hook. Fl. II., 269.

Along the shores of the Gulf of Georgia on both sides and common in many places on Vancouver Island, especially along the Nanaimo Railway, also on wet banks along the C. P. Ry. from the coast east to Yale, B.C. (*Macoun.*) Shore of Burrard Inlet at Vancouver City. (*Prof. Fowler.*)

(2957.) **E. arvense**, Linn. Common Horsetail. Hook. Fl. II., 269; Pursh, Fl. II., 651.

Abundant on wet undrained loamy soil from Newfoundland westward in all parts of the country to the west coast of Vancouver Island, and northward to Alaska and the Arctic coast.

Var. **campestre**, Milde.

Greenland, Aug., 1888. (*Rosenvinge.*) Nottingham Island, Hudson Strait, 1886. (*Mackenzie.*) Cape Chudleigh, Hudson Strait, Aug., 1884. (*R. Bell.*)

(2958.) **E. pratense**, Ehrh.

E. umbrosum, Willd.; Hook. Fl. II., 269.

Damp thickets and sides of ravines; not rare. Windsor and Musquodoboit, N.S. (*How.*) Campbellton, N.B. (*Chalmers.*) North West

Arm, near Halifax, and North Mountain, near Annapolis, N.S.; also Point Fame, coast of Gaspé, Q. (*Macoun.*) Cape Rouge, near Quebec. (*St. Cyr.*) Lake Mistassini and Rupert River, N.E.T. (*J. M. Macoun.*) Owen Sound and Saugeen, Ont. (*Burgess.*) Shores of Lake Nepigon and Lake Superior, and westward through the forest country, Rocky Mountains, and British Columbia mountains to the mountains of Vancouver Island. (*Macoun.*) Carleton House to the Rocky Mountains. (*Drummond.*)

(2959.) ***E. sylvaticum***, Linn.; Hook. Fl. II., 269.

In loamy woods and river bottoms; not rare. Newfoundland. (*Miss Brenton, Rev. A. Wagborne.*) Nain, coast of Labrador. (*R. Bell.*) Very common throughout New Brunswick. (*Fowler's Cat.*) Common in Nova Scotia. (*Sommer's Cat.*) Yarmouth and Truro, N.S.; Anticosti; and at Tignish, Prince Edward Island. (*Macoun.*) Gomin's woods, near Quebec. (*St. Cyr.*) Vicinity of Ottawa. (*Fletcher, Fl. Ott.*) Wet places, Lake Joseph, Muskoka, Ont. (*Burgess.*) Common in cool woods from Carleton Place, near Ottawa, westward through northern Ontario to Lake Nepigon; also in the valley of the Columbia at Donald, in the Selkirk Mountains, and at Stewart Lake, B.C. (*Macoun.*) From the Saskatchewan to Fort Franklin on the Mackenzie River. (*Hook. Fl.*) Greenland. (*Dr. Walker.*) Kotzebue Sound. (*Roth. Alask.*)

(2960.) ***E. palustre***, Linn.; Hook. Fl. II., 269.

In wet ditches and on springy places along rivers; not rare. Near Bedford, N.S. (*Sommer's Cat.*) Mistassini, N. E. Ter. (*J. M. Macoun.*) Knee Lake, Nelson River, and York Factory, Hudson Bay. (*R. Bell.*) Low ground, Sorel, Q. (*Burgess.*) Ste. Clotilde, Arthabaska Co., Q. (*St. Cyr.*) North Hastings, and east side of Lake Nepigon, Ont.; Red Deer River, 10 miles above Red Deer Lake, Lat. 53°, also in river bottoms westward to Lesser Slave Lake and Peace River; rather common along the Bow River at Kananaskis Station, C.P.Ry., and along Beaver Creek, in the Selkirk Mountains and abundant along Shuswap Lake, especially at Sicamous, B.C. (*Macoun.*) Lake Huron to the shores of the Arctic Sea. (*Hook. Fl.*)

Var. ***polystachyum***, Hook.

E. limosum var. *β. Candelabrum*, Hook. Fl. II. 269?

Muskeg Island, Lake Winnipeg, Aug., 1884. (*J. M. Macoun.*) Growing in water at Lake Winnipeg. (*Hook. Fl.*)

(2961.) ***E. littorale***, Kühlewein.

Mouth of Lake Champlain, Q. (*Pringle*.) The specimens referred to this species by Milde (*Gray Manual*, 654) were collected by the author at Belleville, Ont., in the summer of 1860, and sent to Sir William Hooker, who referred them to *E. limosum* var. *fluviatile*. Since then it has been found to be not uncommon along the boggy shores of the Bay of Quinte at Belleville and Little Flat Rock Portage, Lake Nepigon; also at Agassiz, B.C. (*Macoun*.)

It is doubtless common but has been hitherto confounded with the next.

(2962.) ***E. limosum***, Linn.; Hook. Fl. II., 269.

E. uliginosum Pursh, Fl. II., 651.

Common along the margins of rivers and lakes, and frequently in marshes in all parts of Canada. Antigonish Co., N.S. (*McKay*.) Kent Co., Tobique Lakes, Nictaw Lake, Carleton Co., and Nipisiquit Lakes, N.B. (*Fowler's Cat.*) Beesie River, Anticosti; Cove Head, Prince Edward Island; also Gaspé Basin, Gaspé, Q. (*Macoun*.) St. Sauveur, near Quebec, and at Ste. Rose, Laval Co., Q. (*St. Cyr*.) Vicinity of Ottawa. (*Fletcher Fl. Ott.*) Swamps at London, Ont. (*Burgess*.) Shallow water, Glenelg, N.S. (*Faribault*.) Ponds of Salmon River, at Truro, N.S. (*Campbell*.) Common throughout Ontario and westward to the Rocky Mountains, British Columbia and on the west coast of Vancouver Island at Barclay Sound, and north to Lat. 55° at McLeod's Lake B.C. (*Macoun*.)

(2963.) ***E. lævigatum***, A. Braun.

E. hyemale, Hook. Fl. II., 270 in part.

Quite common in the prairie region and in the dry district of British Columbia. Dry bank, Emerson, Man. (*Burgess*.) Maple Creek, Alberta. (*J. M. Macoun*.) Boss Hill Creek and South Saskatchewan near Medicine Hat, Alberta; also at Morley and Canmore, Rocky Mountains; quite common at Kamloops, Spence's Bridge and Cliche Creek, B.C. (*Macoun*.) Guichon Creek, B.C. (*Dawson*.)

(2964.) ***E. robustum***, A. Braun.

Apparently confined to British Columbia. Wigwam River, Kootanie Valley, B.C. (*Dawson*.) Near Victoria, Vancouver Island. (*Fletcher*.) Wooded slopes, Gordon Head, Telegraph Bay, Vancouver Island; also at Agassiz, B.C. (*Macoun*.)

(2965.) ***E. hyemale***, Linn.; Hook. Fl. II., 270 in part.

Quite common throughout the northern forests, and westward through the mountains to the Pacific. Rather rare at Bass River; also at Drummond, Victoria Co., N.B. (*Fowler's Cat.*) Portage, Kent Co.; Bairdsville and Simmonds, Carleton Co., N.B. (*Brittain.*) Rivière de Brig, and Jupiter River, Anticosti; Brackley Point, and elsewhere on P. E. I.; common along the Gaspé coast, Q. (*Macoun.*) Lac St. Joseph, Portneuf Co., Q. (*St. Cyr.*) Vicinity of Ottawa. (*Fletcher Fl. Ott.*) Gravelly banks, London, Ont. (*Burgess.*) Queen Charlotte Islands. (*Dawson.*)

(2966.) ***E. ramosissimum***, Desf.

We refer to this species forms intermediate between *E. hyemale* and *E. variegatum* but which differ from the first in having a short black sheath with soft fragile teeth which are united in groups by thin white membranous margins, and tipped with a long soft point, from the latter by the greater number of ridges, greater size and longer teeth. Speke's Point, Lake Nepigon, Ont., Shawnagin Lake, Vancouver Island. (*Macoun.*)

(2967.) ***E. variegatum***, Schleicher, Hook. Fl. II., 270.

In sand by rivers and lakes; not rare. Near Andover, N.B.; rare (*Brittain.*) Rivière de Brig, and Salt Lake, Anticosti, and at Gaspé Basin, Q. (*Macoun.*) Border of the Montmorency River at Beauport, Q. (*St. Cyr.*) Wet places, Niagara Falls. (*Burgess.*) Shore of Lake Ontario, at Presqu'île Point, near Brighton; sands, Lake Nepigon; Red Deer River, Lat. 53°, Man.; along the Bow River, in sand and westward through the Rocky Mountains to the Columbia at Donald, in sand along Shuswap Lake, and on the Indian Reservation at Kamloops, B.C.; also along the shores of Horne and Cameron lakes, Vancouver Island. (*Macoun.*) Elk River, Kootanie Valley; along the Upper Liard River, N.W.T. (*Dawson.*) Frequent in Canada and thence to the Saskatchewan and Arctic Sea. (*Hooker Fl.*) Greenland. (*Rosenvinge.*) Bartlett Bay, Alaska. (*Meehan.*)

(2968.) ***E. scleroides***, Michx. Fl. II., 281.

E. variegatum var. β . Hook. Fl. II., 270.

Common on the slopes of cool ravines and in swampy woods northward. Nottingham Island, Hudson Strait. (*R. Bell.*) Pictou, N.S. (*McKay.*) Common about River Charlo and Point Le Nim, N.B. (*Fowler's Cat.*) Wet places at Truro, N.S.; Brackley Point and other

places, Prince Edward Island; Jupiter River, Anticosti, and along the Gaspé coast in woods. (*Macoun.*) Beauport, Quebec Co.; Rivière des Aulnaies and Chambord, Chicoutimi Co., Q. (*St. Cyr.*) Vicinity of Ottawa. (*Fletcher Fl. Ott.*) Low woods, London, Ont. (*Burgess.*) Very common throughout northern Ontario, and westward through the forest to the Rocky Mountains; Bow River Pass, and westward to Donald in the Columbia valley; along a ravine at Hastings, Burrard Inlet, B.C. (*Macoun.*) Middle Branch of North Fork of Old Man River, Rocky Mountains; Eliguck Lake, 1876, Chilcoten Plains, B.C. (*Dawson.*) About the Saskatchewan. (*Hook. Fl.*)

NOTE.—The pages of this Catalogue (5 to 39) including the orders Ophioglossaceæ and Filices have been prepared by T. J. W. Burgess, M.B., F.R.S.C.

CXX. OPHIOGLOSSACEÆ. ADDER-TONGUE FAMILY.

738. OPHIOGLOSSUM, Linn., Gen. Pl., No. 1171. (ADDER-TONGUE.)

- (2969.) *O. vulgatum*, Linn., Sp. Pl., 1518. Michx., Fl. Bor.-Am., II., 275. Pursh, Fl. Am. Sept., II., 675. Lawson, Can. Nat., i., 293. Goode, Can. Nat., ix., 301. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 173.

Usually found in the grass of low meadows, and, though rather rare, has a wide range, extending from Nova Scotia westward to Manitoba. In the sand at Brackley Point, Prince Edward Island. (*Macoun.*) In fields near Truro, N.S. (*Campbell.*) Truemanville, N.S. (*A. J. Trueman.*) Hopewell and Cape Enrage, N.B. (*J. Brittain.*) Hemmingford, Que. (*Goode.*) Beechwood, near Hemlock Lake, Ottawa, Ont. (*Fletcher.*) Ferry Point, Belleville, Ont.; beaver meadow between Hooper's Lake and the Hastings Road, Tudor Tp., Hastings Co., Ont.; grassy places along the Trent, McCann's Island, Seymour Tp., Northumberland, Ont.; St. Thomas, Elgin Co., Ont. (*Macoun.*) Valley of the Humber, Toronto, Ont. (*Burgess.*) Low meadow, Port Stanley, Elgin Co., Ont. (*J. Bowman.*) Mouth of Ruiny River, Lake of the Woods. (*Dawson.*)

739. BOTRYCHIUM, Swartz, Schrad. Journ. Bot., (1800,) II., 110. (GRAPE-FERN.)

- (2970.) *B. Lunaria*, Swartz, Schrad. Journ. Bot., ii., 110. Hook., Fl. Bor.-Am., II., 265. Lawson, Can. Nat., i., 293. Wätt, Can.

Nat., iv., 364. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 174.

Very variable both in shape and habitat and ranging from Quebec to British Columbia and high northward. Island of Orleans, Que. (*J. F. Whiteaves*.) Rivière du Loup (*en-bas*), Que. (*McCord*.) Island of Anticosti. (*St. Cyr*.) Exposed cliffs near Cape Rosier, Gaspé, Que.; Nepigon Bay, in meadows at Cape Alexander, twelve miles up the Nepigon River, at various points on Lake Nepigon, and at the Pic River, Lake Superior, Ont.; abundant on the prairie close to the sand hills at Flat Creek, Manitoba; on mountain slopes, Bow River Pass, Rocky Mountains; boggy meadow near Fort McLeod, B.C. (*Macoun*.) Middle Branch of North Fork of Old Man River, Rocky Mountains. (*Dawson*.) Near head of Dead Man River, B.C. (*J. M. Macoun*.) Carlton House, on the Saskatchewan, N.W.T. (*Richardson*.) Wet prairies in the Rocky Mountains (*Drummond*.) Echimamish River to Knee Lake, and Churchill River near Hudson Bay, Keewatin. (*R. Bell*.) Open spaces in damp, grassy thickets at the Hudson Bay Co.'s post on Lake Mistassini, and in a similar locality near the Oatmeal Falls on Rupert River, N. E. Ter.; in hard sand between the sand dunes on all the islands in James' Bay, and on Severn River, Keewatin. (*J. M. Macoun*.) Regina, Assa. (*N. H. Cowdry*.)

(2971.) **B. matricariæfolium**, A. Braun, in Doell., Rhein. Fl., 24 (1843). Watt, Can. Nat., iv., 364. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 175.

In Canada, so far as known, limited to the westward by Lake Superior, but has been found sparingly in Unalashka. At Pictou, N.S. (*McKay*.) Dry grass lands, Cape Blomidon, N.S. (*Macoun & Burgess*.) Truemanville, N.S. (*H. Trueman*.) Petitecodiac and Titusville, N.B. (*Brittain*.) Damp hillsides, under bushes, Dalhousie, N.B.; King's Mountain, Chelsea, Que.; Casselman, Ont. (*Fletcher*.) Black River, P.E.I.; gravelly places on sea cliffs, Cape Rosier, Gaspé, Que.; woods near Belleville, Ont.; pine woods five miles north of Campbellford, Northumberland Co., Ont.; below the railway bridge, Nepigon River, and on islands in Lake Nepigon, Ont.; thickets at Agassiz, B.C. (*Macoun*.)

(2972.) **B. lanceolatum**, Angström, Botan. Notiser (1854) 68. Goode, Can. Nat., ix., 300. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 176.

Very local in its distribution on shaded, mossy banks of streams, in rich woods, and low pastures. Fields and rich damp woods, Truemanville, N.S. (*H. Trueman.*) Shady places in rich soil, Fredericton and Bass River, N.B. (*Fowler.*) Kennebecasis, N.B. (*Hay.*) Magog, Que. (*Goode.*) Port Simpson, B.C. (*Anderson.*)

- (2973.) **B. simplex**, Hitchcock, Sillim. Am. Journ. of Sci. and Arts, vi. (1823) p. 103. Hook., Fl. Bor.-Am., ii., 265. Watt, Can. Nat., iv., 364. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 177.

B. Virginicum, var. (?) *simplex*, Gray, Man., ed. 2, 602. Lawson, Can. Nat., i., 292.

Occurs in meadows, damp rich woods, and on hillsides. Windsor, N.S. (*How.*) Truemanville, N.S. (*Trueman.*) Petitecodiac and Fredericton, N.B. (*Bailey.*) Dalhousie, N.B. (*Fletcher.*) Prince Edward Island. (*F. Bain.*) Near the sea shore, Temiscouata, Que. (*Thomas.*) Quebec, Que. (*Brunet.*) Montreal, Que. (*McCord.*) A small island at the east end of St. Joseph's Island, Georgian Bay, Ont. (*J. Bell.*) Common in meadows along the Kaministiquia River above Fort William, Lake Superior, Ont.; grassy slope below the peak of Castle Mountain, near Silver City, Rocky Mountains. (*Macoun.*) Between Cumberland House and Hudson Bay, N. W. Ter. (*Drummond.*)

- (2974.) **B. ternatum**, Swartz, Schrad. Journ., ii., III., Watt, as var. *Americanum*, Can. Nat., iv., 364. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 177. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 9.

Botrypus lunarioides, Michx., Fl. Bor.-Am., II., 274.

Botrychium lunarioides, Swartz, Syn. Fil., 172. Gray, Man., 672. Provancher, Fl. Can., 722. Lawson, Can. Nat., i., 292.

Botrychium fumarioides, Willd., Sp. Pl., v., 63. Pursh, Fl. Am. Sept., II., 655.

Botrychium ternatum, Swartz, var. *lunarioides*, Milde, Bot. Monog., 108. Macoun's Cat., No. 2340, var. i.

The type, which has been made to include var. *lunarioides*, var. *rutefolium*, var. *australe*, and sub-var. *intermedium*, has a very wide range, extending quite across the continent and far northward. Cape Porcupine; Boylston, Guysborough Co.; Rawdon, Hants Co.; and other places in Nova Scotia. (*Ball.*) Bedford and Windsor, N.S.; Rapide de Femme, about six miles below Grand Falls, N.B. (*Jack.*) Rather common in New Brunswick. (*Fowler.*) Prince Edward Island. (*F. Bain.*) Quebec, Que. (*Sheppard.*) Three Rivers, Que. (*MacLagan.*) Isle of Orleans, Que. (*St. Cyr.*) St. Joachim; Que.

(*Provancher.*) Waste places near Prescott Junction, Ont. (*Billings.*) Hamilton, Ont. (*Buchan.*) London, Ont. (*Saunders.*) Toronto, Blenheim, and Leamington, Ont. (*Burgess.*) Ottawa, Ont.; New Westminster and Victoria, B.C. (*Fletcher.*) Salmon River, N.B. (*J. E. Wetmore.*) In fields and by roadsides, Brackley Point, Prince Edward Island; along the north shore of Lake Superior, at Nepigon River, Red Rock, Fort William, &c.; frequent on the western prairies, especially toward the Saskatchewan; Peace River Pass, Rocky Mountains; rare on the snow slides near the summit of the Selkirk Mountains, B.C., on the line of the C. P. Ry.; also in thickets at Agassiz, B.C., and summit of Mount Arrowsmith, Vancouver Island. (*Macoun.*) Mouth of Rainy River, Lake of the Woods, Ont. (*Dawson.*) Oatmeal Falls, Rupert River, N. E. Ter.; Fort George, Hudson Bay. (*J. M. Macoun.*)

Var. **obliquum**, Milde, Bot. Monog., 109. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 178.

B. obliquum, Muhl. in Willd., Sp. Pl., v., 63. Pursh, Fl. Am. Sept., ii., 655. Hook., Fl. Bor.-Am., ii., 265. Lawson, Can. Nat., i., 292.

Is much less frequently seen than the type. New Germany and Oaklands Lake, Mahone Bay, N.S. (*Ball.*) Dry, rich woods near the hop-yard, Belleville, Ont., and in sandy soil on Rice Lake Plains, Ont. (*Macoun.*) Sandy woodland, Niagara Falls, Ont. (*Burgess.*) London, Ont. (*Saunders.*) About Hudson Bay, York Factory, and on the "Height of Land," in the Rocky Mountains. (*Drummond.*)

Var. **dissectum**, Milde, Bot. Monog., 110. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 178.

B. dissectum, Spreng., Anleitg., 172 (1804.) Muhl. in Willd., Sp. Pl., v., 64. Pursh, Fl. Am. Sept., ii., 656.

Only recorded from Mount Uniacke and New Germany, N.S. (*Ball.*); Halifax, N.S. (*Jack*); and woods near the Whirlpool, Niagara Falls, Ont. (*Macoun.*)

(2975.) **B. Virginianum**, Swartz, Schrad. Journ., ii., 111. Hook. & Baker, Syn. Fil., 448. Watt, Can. Nat., iv., 364. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 179.

Botrypus Virginicus, Michx., Fl. Bor.-Am., ii., 274 (1803.)

Botrychium Virginicum, Willd., Sp. Pl., v., 64 (1810). Gray, Man., 671. Pursh, Fl. Am. Sept., ii., 656. Provancher, Fl. Can., 721. Lawson, Can. Nat., i., 292.

A very abundant species, ranging from the Maritime Provinces to British Columbia, and northward to near the Arctic Circle. Pietou, N.S. (*McKay*.) Port Mulgrave, N.S. (*Ball*.) Cape Blomidon, N.S. (*Lawson*.) North Mountain, Annapolis N.S., and Whycocogmah, Cape Breton. (*Macoun & Burgess*.) Truemanville, N.S. (*H. Trueman*.) Rather common in New Brunswick. (*Fowler*.) Ste. Anne River, Gaspé, Que. (*Porter*.) Isle of Orleans, Que. (*St. Cyr*.) Rocky woods, Jupiter River, Anticosti, Que.; north shore of Lake Superior at Red Rock, Nepigon, Thunder Bay, and up the Kaministiquia River, Ont.; Fort McLeod, Lat. 55°, and lower valley of Fraser River, B.C.; rather rare on grassy slopes and in open woods, from Laggan in the Rocky Mountains, Alta., to Donald in the Columbia Valley, B.C., along the line of the C. P. Ry.; Goldstream, Vancouver Island, and at Agassiz, B.C. (*Macoun*.) Very abundant in open, boggy woods, and in burnt woods of any kind, all around Lake Mistassini, N. E. Ter. (*J. M. Macoun*.) Lower slopes of South Kootanie Pass, Rocky Mountains, Lat. 49°. (*Dawson*.) Oxford House, Keewatin. (*McTavish*.) Common in rich woods about Victoria, and in other parts of Vancouver Island, B.C. (*Anderson*.) One of the commonest ferns in western Quebec and south-western Ontario. (*Macoun, Burgess, Fletcher, &c.*) Banff, Rocky Mountain Park. (*J. Smith*.)

CXXI. FILICES. FERN FAMILY.

740. *POLYPODIUM*, Linn., Gen. Pl. No. 1179.
(POLYPODY.)

- (2976.) *P. vulgare*, Linn., Sp. Pl., 1544. Michx., Fl. Bor.-Am., ii., 271. Pursh, Fl. Am. Sept., ii., 658. Lawson, Can. Nat., i., 268. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., Sect. iv., 180. Burgess, Trans. Roy. Soc. Can., iv., Sect. iv., 10.

P. vulgare, Linn., var. *Americanum*, Hook., Fl. Bor.-Am., ii., 258.

P. Virginianum, Linn., Sp. Pl., 1545. Pursh, Fl. Am. Sept., ii., 658.

A rather variable species as regards the shape and degree of division of the frond and of its pinnae. Commonly found on rocks exposed or shaded, but sometimes on dry banks or old logs, and occasionally on growing trees, in dense woods. It ranges from the Atlantic to the Pacific, extending northward to Nelson and Slave rivers, and probably to the Arctic Circle. Of very general distribution through-

out Nova Scotia. (*Ball.*) Common near St. John, but rare in the northern counties of New Brunswick. (*Fowler.*) Grand Falls and Woodstock, N.B. (*Jack.*) Common in Quebec. (*Provancher, D'Urban, McCord, J. Bell, St. Cyr, &c.*) Abundant in most parts of Ontario. (*Macoun, Lawson, Billings, Logie, Burgess, Ami, &c.*) Plentiful in rocky parts of Manitoba. (*Macoun, Dawson, Burgess.*) Nelson River, Hudson Bay. (*Bell.*) Rocky Mountains. (*Macoun.*) The form known as var. *occidentale* is very abundant and is the common one in British Columbia, but the normal type also occurs. (*Macoun, Fletcher, Anderson.*) The var. *Canbriicum* was found on rocks at Port Simpson B.C. (*Anderson.*)

(2977.) **P. falcatum**, Kellogg, Proc. Cal. Acad., i., 20. (1854.)
Macoun & Burgess, Trans. Roy. Soc. Can., ii., Sec. iv., 181.

P. glycyrrhiza, Eaton, Am. Journ. Sci. and Arts (July 1856), 138.

Confined to British Columbia, where it is found in the crevices of rocks and on trees. Abundant on rocks along the coast between Victoria and Esquimault Harbour, also at Goldstream, Vancouver Island; frequent in the hollows of living trees in the valley of the Fraser River, especially at Hastings and the mouth of Harrison River. (*Macoun.*) On rocks at Victoria. (*Anderson.*)

(2978.) **P. Scouleri**, Hook. & Grev., Ic. Fil., t. lvi. Hook. & Baker, Syn. Fil., 342. Macoun & Burgess, Trans. Roy. Soc. Can., ii., Sect. iv., 181.

P. carnosum, Kellogg, Proc. Cal. Acad., ii., 88.

Restricted to British Columbia and found usually on rocks exposed to the spray of the sea. Alberni, west side of Vancouver Island. (*Anderson.*) On exposed rocks, on small islands in Barclay Sound, Vancouver Island. (*Macoun.*) Near Cape Scott, and around the northern and north-western coast of Vancouver Island. (*Dawson.*)

741. **GYMNOGRAMME**, Desv., Berl. Magaz., V. 305. (GOLD-FERN.)

(2979.) **G. triangularis**, Kaulf., Enum. Fil., 73. Hook., Fl., Bor.-Am. ii., 259. Hook. & Baker, Syn. Fil., 384. Macoun & Burgess, Trans. Roy. Soc. Can., ii., Sect. iv., 182.

Found only in British Columbia, and rare even there. Crevices of

rocks on the grassy slopes of Cedar Hill and Gordon Head, a few miles from Victoria, and at Goldstream and Departure Bay, near Nanaimo. (*Macoun.*) Mount Finlayson, Vancouver Island. (*Hill.*) Common about Victoria on bare hills under the shady sides of rocks. (*Anderson.*)

742. CHEILANTHES, Swartz, Syn. Fil., 126. (LIP-FERN.)

- (2980.) **C. gracillima**, D. C. Eaton, Bot. Mex. Bound., 234. Hook. & Baker, Syn. Fil., 139. Macoun & Burgess, Trans. Roy. Soc. Can., ii., Sect. iv., 182.

C. vestita, Brackenridge, Fil. of U. S. Expl. Exped., 91.

A British Columbian species growing in dense beds on rocks. Mount Finlayson, Vancouver Island. (*Fletcher, Macoun.*) Fissures of dry rocks on Mount Finlayson at the head of, and on other hills on the east side of, Saanich Arm, near Victoria, V.I.; Harrison Lake. (*Anderson.*) Crevices of dry and exposed rocks a few miles above Spence's Bridge on the Thompson River. (*Macoun.*) At Pend d'Oreille River. (*Lyall.*)

- (2981.) **C. lanuginosa**, Nutt., MS. in herb. Hook. Hook. & Baker, Syn. Fil., 139. Macoun & Burgess, Trans. Roy. Soc. Can., ii., Sect. iv., 183.

C. vestita, Hook., Sp. Fil., excl. syn., t. 108, B. Not of Swartz, and Willd.; Hook., Fl. Bor.-Am., ii., 264.

Found growing in matted masses, on exposed rocks, and limited in range to British Columbia and the eastern base of the Rocky Mountains. Abundant on ledges of rock, between Morley and Old Bow Fort, on the right bank of the Bow River, Alberta; crevices of rocks near Limestone Point on the North Thompson River, B.C. (*Macoun.*) Rattlesnake Bluff, Black Canyon, above Ashcroft, B.C. (*Hill.*) Alpine woods, Rocky Mountains. (*Drummond.*) New Caledonia, Northern British Columbia, and north-west coast. (*Douglas.*) Banff, Rocky Mountain Park. (*J. Smith.*)

743. PELLÆA, Link, Fil. Hort. Berol., 59. (CLIFF-BRAKE.)

- (2982.) **P. gracilis**, Hook., Sp. Fil., ii., 138. Hook. & Baker, Syn. Fil., 145. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., Sect. iv., 183.

- Pteris gracilis*, Michx., Fl. Bor.-Am., ii., 262. Swartz, Syn. Fil., 99.
 Pursh, Fl. Am. Sept., ii., 668. Hook., Fl. Bor.-Am., ii., 264.
Allonorus gracilis, Presl, Tent. Pterid., 153. Gray, Man., Ed. 2, 591.
Allonorus Stelleri, Ruprecht, Distr. Crypt. Vasc. in Imp. Ross., 47.
 Lawson, Can. Nat., i., 272.
Pellaea Stelleri, Beddome, Lawson, Fern Fl. Can., 235.

Occurs in the crevices of rocks from Labrador to British Columbia, but is by no means a common species. Morris Rock, Restigouche, and Grand Falls, St. John, N.B. (*Fowler*.) Madawaska, N.B. (*Hay*.) Woodstock, N.B. (*Jack*.) Mingan Islands, Que. (*St. Cyr*.) On crystalline limestone, near the Lake of Three Mountains, River Rouge, Que. (*D'Urban*.) Cacouna, Que. (*J. W. Dawson*.) Rivière du Loup, Que. (*Thomas*.) Crevices of limestone rocks near Hemlock Lake, Ottawa, Ont. (*Fletcher*.) Lakefield, Ont. (*Mrs. Traill*.) On Guelph dolomites, Little Saugeen River, Durham, Grey Co., Ont. (*H. M. Ami*.) Crevices of wet rocks at the mouth of the Temiscami River, about twenty-five miles from the east end of Lake Mistassini, N. E. Ter.; summit of Mount Queest, Gold Range, B.C., altitude 7,000 feet. (*J. M. Macoun*.) Crevices of rocks near L'Anse à Fallon, Cape Rosier, Ste. Anne des Monts River, Gaspé, and Gunn River, Anticosti, Que.; limestone rocks along the River Moira near Belleville, Foster's Flats below the Whirlpool, Niagara Falls, rocks at Owen Sound, along the Kaministiquia River at and below the Kakabeka Falls, under the cliffs at Red Rock and Nipigon stations on the C. P. Ry., crevices of the Huronian slates seventeen miles from Michipicotin on the Magpie River, Ont.; Peace River Pass, Rocky Mountains, N. W. Ter.; crevices of rocks in rear of the C. P. Ry. water-tank at Kicking Horse Lake, Rocky Mountains, and at Mount Stephen, B.C. (*Macoun*.) Rocky hillsides, not common, Kootanie District, B.C. (*Anderson*.) Canada. (*Goldie*), to the Saskatchewan. (*Drummond*), in Hook. Fl. Bor.-Am.

- (2983.) *P. atropurpurea*, Link, Fil. Hort. Berol., 59. Lawson, Can. Nat., i., 272. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., Sect. iv., 184.

Pteris atropurpurea, Linn., Sp. Pl., 1534 Michx., Fl. Bor.-Am., ii., 261.
 Pursh, Fl. Am. Sept., ii., 668. Hook., Fl. Bor.-Am., ii., 264.

A widely distributed but very local fern, ranging from Ontario westward to British Columbia and northward to Great Bear Lake. Hamilton, Ont. (*Logie*.) Not rare in the crevices of limestone cliffs in the Dundas Ravine, Dundas, Ont. (*Burgess*.) Limestone rocks, Elora, Ont. (*McPherson*.) Crevices of rocks at the Whirlpool and Foster's Flats, Niagara Falls, Ont.; common at various places on rocks

around Owen Sound and Colpoy's Bay, Ont.; rare in crevices of limestone rocks on the mountains near Kananaskis Station, Rocky Mountains, on the C. P. Ry., and on limestone cliffs, Clearwater River, north of Methy Portage, Lat. 57°, N. W. Ter.; canyon, near Buffalo Head Mountain, Rocky Mountains; crevices of dry rocks between Spence's Bridge and C  che Creek, B.C. (*Macoun.*) Hillsides on broken rocks, not common, Kootanie District, B.C. (*Anderson.*) Canada to Bear Lake and the Rocky Mountains. (*Richardson, Drummond.*) Mountains between Nicola and Kamloops, B.C. (*Dawson.*) Banff, Rocky Mountain Park. (*J. Smith.*)

- (2984.) **P. densa**, Hook., Sp. Fil., ii., 150. Hook. & Baker, Syn. Fil., 149. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 185.

A rock species, confined so far as known to the provinces of Quebec and British Columbia, where it is rare. Found by Prof. Allen on Mount Albert, Shickshock Mountains, Gasp  , Que., in 1881, growing exposed to the sun on the steep walls of ravines, at 2000 to 3000 feet elevation. (*Eaton.*) Abundant on cliffs along the Fraser River above Yale and within the Cascade Mountains, notably at Chinaman's Bluff; on rocks, Sicamous, Shuswap Lake; and summit of Mount Finlayson, Vancouver Island, B.C. (*Macoun.*) Mount Finlayson, Vancouver Island, B.C. (*Anderson.*)

744. CRYPTOGRAMME, R. Br., 'APP. Frank. Narr.
(ROCK-BRAKE.)

- (2985.) **C. acrostichoides**, R. Br., appendix to Franklin's First Journey, 767. Hook., Fl. Bor.-Am., ii., 264. Lawson, Can. Nat., i., 273. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 185.

C. crispata, forma *Americana*, Hook., Sp. Fil., ii., 130.

Allosorus acrostichoides, Spreng., Syst., 66. Gray, Man., 660.

C. crispata, var. *acrostichoides*, Lawson, Fern Fl. Can., 236.

Is found, forming dense tufts, among rocks and in their crevices, from Lake Huron westward to British Columbia, and stretching northward to within the Arctic Circle. McLeod's Harbor, Manitoulin Island, Ont. (*J. Bell.*) Cumberland House to Great Bear Lake, N. W. Ter. (*Richardson.*) Between Echimamish River and Oxford House, and around Cross Lake and on Nelson River near Hudson Bay, Keewatin. (*R. Bell.*) Common from Lake Winnipeg to the "Height of Land,"

towards the east, N. W. Ter. (*J. M. Macoun.*) Rocks along the Arctic coast from Mackenzie River to Baffin Bay. (*Hooker.*) Stony places in the Rocky Mountains, but rare, to the sources of the Columbia River, B.C. (*Drummond*), thence to the Grand Rapids of the Columbia. (*Douglas.*) Kicking Horse Pass, Rocky Mountains, Selkirk Mountains, common in the Cascade and Gold ranges, along the Fraser River at Agassiz, and common on Vancouver Island, B.C. (*Macoun.*) Wigwam River, Kootanie Valley, Rocky Mountains. (*Dawson.*) Yale, B.C. (*Fletcher.*) Common at Victoria, B.C., among rocks on bare hills. (*Anderson.*)

**745. PTERIS, Linn., Gen. Pl., No. 1174.,
(BRAKE OR BRACKEN.)**

(2986.) ***P. aquilina***, Linn., Sp. Pl., 1533. Michx., Fl. Bor.-Am., ii., 262. Hook., Fl. Bor.-Am., ii., 263. Provancher, Fl. Can., 715. Lawson, Can. Nat., i., 270. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 186.

Allosorus aquilinus, Presl, Tent Pterid., 153.

Is common, growing usually on sand or sandy loam, from the Atlantic to the Pacific. Very common in Nova Scotia. (*McKay.*) Growing everywhere in New Brunswick. (*Fowler.*) Prince Edward Island. (*Bain.*) Jupiter River, Anticosti, Que. (*Macoun.*) Common everywhere in Quebec. (*McCord, St. Cyr.*) Common at Lake Mistassini, and down the Rupert River to James Bay, N. E. Ter. (*J. M. Macoun.*) Common in Ontario and in parts of Manitoba. (*Macoun, Burgess, &c.*) Saskatchewan plains, N. W. Ter., and Rocky Mountains. (*Macoun.*)

Var. ***lanuginosa***, Bong.; Hook., Fl. Bor.-Am., ii., 263. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 187.

P. lanuginosa, Bory, in Willd., Sp. Pl., v., 403.

The common form on Vancouver Island and the mainland of British Columbia, where it is known to extend eastward at least as far as the Columbia River at Donald. (*Fletcher, Macoun.*) It is characterized by the silky-pubescent under surface of the fronds.

**746. ADIANTUM, Linn., Gen. Pl., No. 1180.
(MAIDENHAIR.)**

- (2987.) **A. pedatum**, Linn., Sp. Pl., 1557. Swartz, Syn. Fil., 121. Michx., Fl. Bor.-Am., ii., 263. Pursh, Fl. Am. Sept., ii., 670. Hook., Fl. Bor.-Am., ii., 264. Provancher, Fl. Can., 714. Lawson, Can. Nat., i., 270. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 187.

A. boreale, Presl, Tent. Pterid., 158.

Is usually found in rich, damp woods, and outside of Ontario is very local in its distribution. Newport, Hants Co., N.S. (*Ball.*) Archibald's Mill, Upper Musquodoboit, Halifax Co., N.S. (*Jack.*) Upper Restigouche and Upper St. John; Keswick Ridge, York Co., N.B. (*Fowler.*) Andover, Victoria Co., N.B. (*Hay.*) Moose Mountain, Carleton Co., N.B. (*Bailey.*) Quebec, Que. (*Sheppard.*) St. Joachim and Isle St. Paul, Montreal, Que. (*Provancher.*) Lévis; Cap Rouge; and Ste. Rose, Laval Co., Que. (*St. Cyr.*) River Rouge, Que. (*D'Urban.*) Very common throughout Ontario. (*Lawson, Macoun, Burgess, &c.*) On the plateau of Mount Albert, Shickshock Mountains, Gaspé, Que.; Vancouver Island, Yale, and other places in British Columbia. (*Macoun.*) Plentiful about Victoria, B.C. (*Fletcher, Anderson.*) Kootanie Lake, B.C. (*J. Anderson.*) Queen Charlotte Islands, B.C. (*Dawson.*)

Var. **rangiferinum**, Burgess, Trans. Roy. Soc. Can., iv., Sect. iv., 11.

A form with longer stalked pinnules, cleft, on the upper side, into narrow, toothed lobes. At present known only in one locality, viz., shaded rocks overhanging the water, Goldstream, at the base of Mount Finlayson, near Victoria, B.C. (*Anderson.*) Will probably be found to occur elsewhere on Vancouver Island.

747. LOMARIA, Willd. (DEER-FERN.)

- (2988.) **L. spicant**, Desv., Mag. d. Gesellsch. Naturforsch. Freunde zu Berlin, v., 325. Hook. & Baker, Syn. Fil., 178. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 188. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 12.

Blechnum boreale, Swartz, Schrad. Journ., ii., 75. Syn. Fil., 115. Pursh, Fl. Am. Sept., ii., 669. Hook., Fl. Bor.-Am., ii., 263.

Is confined to the coast of British Columbia west of the Coast Range,

where, however, it is abundant in rich, cool woods. Nootka, Vancouver Island. (*Mertens.*) Common near Victoria and along the coast of the mainland. (*Anderson.*) New Westminster. (*Fletcher.*) Drew's Harbor and Queen Charlotte Islands. (*Dawson.*) Observatory Inlet. (*Scouler.*) Pitt River. (*Hill.*) Vancouver City. (*Fowler.*) Very abundant in damp woods in many parts of Vancouver Island, and in the thick woods in the Fraser Valley near the coast. (*Macoun.*)

748. WOODWARDIA, Smith, Acta. Taur., V., 411.
(CHAIN-FERN.)

(2989.) **W. Virginica**, Smith, Mém. Acad. Turin, v., 412. Swartz, Syn. Fil., 117. Pursh, Fl. Am. Sept., ii., 670. Lawson, Can. Nat., i., 278. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 189.

W. Banisteriana, Michx., Fl. Bor.-Am., ii., 263. Swartz, Syn. Fil., 117.

W. thelypteroides, Pursh, Fl. Am. Sept., ii., 670.

Is rather rare in swamps east of Lake Huron. North-West Arm and Dartmouth, Halifax, N.S. (*Ball.*) Roadside between Caledonia and Liverpool, Queen's Co., and between Liverpool and Jordan River, Shelbourne Co., N.S. (*Jack.*) Near Gaspé Basin, Que. (*Eden.*) Near Heck's Mills, ten miles from Prescott, Augusta Township, Ont. (*Billings.*) Peat swamps of the Mer Bleu, near Ottawa, Ont. (*Fletcher.*) Along the Canada Atlantic Railway, near Eastman's Springs, Russell Co., very abundant five miles north of Colborne Village, and common in marshes at west end of Gull Lake, Addington Co., Ont. (*Macoun.*) Near Millgrove, Wentworth Co., Ont. (*Logie.*) Mossy bog surrounding a lake on Lake Island, Lake Joseph, Muskoka, Ont. (*Burgess.*) Swampy ground on the shore of Georgian Bay, twenty-five miles north of Penetanguishene, Ont. (*Alexander.*)

749. ASPLENIUM, Linn., Gen. Pl., No. 1178.
(SPLEENWORT.)

(2990.) **A. viride**, Hudson, Fl. Anglica, ed. i., 385. Swartz, Syn. Fil., 80. Hook., Fl. Bor.-Am., ii., 262. Lawson, Can. Nat., i., 275. Goode, Can. Nat., ix, 300. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 190.

A. Trichomanes, Linn., Sp. Pl., 1540.

Found in the crevices of shaded rocks, from New Brunswick to British Columbia, but rare. Tattagouche Falls, Gloucester Co., and Green Head, St. John Co., N.B. (*Fowler*.) Becoming common about St. John, N.B., in moist shady clefts of limestone rocks. (*Hay*.) Near Tadousac, and at the Falls of Rivière du Loup, Que. (*Watt*.) Clefts of shaded rocks at the mouth of Temiscami River, twenty-five miles from the east end of Lake Mistassini, N. E. Ter. (*J. M. Macoun*.) In a deep gorge on the road from Gaspé Basin to Fox River, and near Grand Etang, on sea cliffs at Mount Louis and at the Falls of Ste. Anne des Monts River, and base of Mount Albert, Que.; between Owen Sound and Sydenham Falls, Ont., and also on both sides of the falls; abundant on debris under limestone cliffs within the Bow River Pass, and on a limestone mountain in Peace River Pass, Rocky Mountains. (*Macoun*.) Amongst broken rocks at Port Simpson, B.C. (*Anderson*.) Moist shady rocks, Rocky Mountains. (*Drummond*.)

(2991.) **A. Trichomanes**, Linn., Sp. Pl., 1540 (in part). Michx., Fl. Bor.-Am., ii., 264. Hook., Fl. Bor.-Am., ii., 262. Swartz, Syn. Fil., 80. Lawson, Can. Nat., i., 274. Provancher, Fl. Can., 715. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., Sect. iv., 191.

A. melanocaulon, Willd., Enum., 1072: Sp. Pl., v., 332. Pursh, Fl. Am. Sept., ii., 666.

Of pretty general distribution, in the crevices of moist shaded rocks, from the Atlantic to the Pacific. Hartley Falls, Pirate Harbor, Strait of Canso, and on Gold River near Chester, Lunenburg, N.S. (*Ball*.) The "Lookout," Cape Blomidon, N.S. (*Lawson*.) Near Three-Mile House, Halifax, N.S. (*Sommers*.) Montreal, Que. (*MacLagan*, *St. Cyr*.) Chatham Township, Argenteuil Co., Que. (*McCord*.) Ottawa, Ont. (*Fletcher*.) Clefts of rocks, Jones' Falls, Leeds Co., and Kingston Mills, Frontenac Co., Ont. (*P. G. Scott*.) On Guelph dolomites, Little Saugeen River, Durham, Grey Co., Ont. (*H. M. Ami*.) Lake Medad, Halton Co., Ont. (*Logie*.) Rocks, just below the falls and near the Whirlpool, Niagara Falls, Ont. (*Burgess*.) East coast of Hudson Bay. (*R. Bell*.) Jupiter River, Island of Anticosti; on Mount Louis, and up the Ste. Anne des Monts River, Gaspé, Que.; Shannonville, near Belleville, Ont.; Red Rock, Lake Superior, and westward to the Lake of the Woods; Clearwater River, near Methy Portage, Lat. 57°, N. W. Ter.; along Peace River, within the Rocky Mountains, and in Bow River Pass, Rocky Mountains; crevices of rocks at Sicamous and Agassiz, B.C.; at Departure Bay, and on Mount Benson, Nanaimo, Vancouver

Island. (*Macoun.*) Great Shuswap Lake and Cascade Mountains, near Yale, B.C. (*Dawson.*) Harrison Lake, Kootanie District, and on Mount Isonhailim, near the mouth of the Cowichan River, Vancouver Island, B.C. (*Anderson.*) Canada to the Saskatchewan. (*Richardson.*)

- (2992.) **A. ebeneum**, Ait., Hort. Kew., ed. i., iii., 462. Hook., Fl. Bor.-Am., ii., 263. Swartz, Syn. Fil., 79. Provancher, Fl. Can., 716. Lawson, Can. Nat., i., 276. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 192.

A. trichomanoides, Michx., Fl. Bor.-Am., ii., 265.

A. platyneuron, Oakes in Lawson, Fern Fl. Can., 237.

Very rare, and chiefly confined to the Province of Ontario. Vandreuil, Que., near the border of Ontario. (*St. Cyr.*) Rocky woods, Brockville, Ont. (*Billings.*) In a thin layer of mould covering the rocks at Jones' Falls, Leeds Co., Ont. (*P. G. Scott.*) Crevices of Laurentian rocks a little to the north of Shannonville Station on the Grand Trunk Railway, nine miles east of Belleville, and Gibson Mountain, a mass of metamorphic rock, Prince Edward Co., four miles south of Belleville, Ont. (*Macoun.*) Point Abino, Lake Erie, Ont. (*Day.*)

- (2993.) **A. angustifolium**, Michx., Fl. Bor.-Am., ii., 265. Swartz, Syn. Fil., 76. Pursh, Fl. Am. Sept., ii., 666. Lawson, Can. Nat., i., 275. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 192.

Is limited in its distribution to Quebec and Ontario, where it is found in low, rich woods. Nun's Island, Montreal, Que. (*Parsons.*) Ste. Rose, Laval Co., Que. (*St. Cyr.*) Open woods, "The Mountain," Montreal, Que. (*McCord.*) Abundant in McKay's Woods, Ottawa; frequent in rich woods, Prince Edward Co., and in rich soil in low woods along Cold Creek, Brighton, Northumberland Co., Ont. (*Macoun.*) Low woods up the Don Valley, Toronto; cedar swamps and low rich woods, London, and low woods, Lucknow, Bruce Co., Ont. (*Burgess.*) Rich woods, Amherstburg, Ont. (*MacLagan.*)

- (2994.) **A. thelypteroides**, Michx., Fl. Bor.-Am., ii., 264. Swartz, Syn. Fil., 82. Pursh, Fl. Am. Sept., ii., 667. Hook. & Baker, Syn. Fil., 226. Provancher, Fl. Can., 716. Lawson, Can. Nat., i., 276. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 193.

A. acrostichoides, Swartz, Schrad. Journ., ii., 54.

Athyrium thelypteroides, Desv., Prodr., 266. Lawson, Fern Fl. Can., 238.

Rather scarce in the Maritime Provinces, but common in most sections of Ontario and Western Quebec. Occurs in rich woods, and is

not known to range west of Lake Superior. Windsor, N.S. (*How.*) Halifax, N.S. (*Lindsay.*) Mount Dalhousie, N.S. (*McKay.*) Strait of Canso; Boylston, Guysborough Co.; and Rawdon, Hants Co.; N.S. (*Ball.*) Ravine at Whyecogmah, Cape Breton. (*Macoun & Burgess.*) Wentworth Station, Cumberland Co., and North Mountains, King's Co., N.S.; near Grand Falls and at Woodstock, N.B. (*Jack.*) Bass River, N.B. (*Fowler.*) Fredericton, N.B. (*Vroom.*) Salmon River, Victoria Co., N.B. (*Hay.*) Quebec, Que. (*Sheppard.*) Isle of Orleans and Ste. Rose, Laval Co., Que. (*St. Cyr.*) Montreal, Lennoxville, and in Argenteuil Co., Que. (*McCord.*) Richmond and Drummond Co's, Que. (*Bothwell.*) Very common in South-western Ontario. (*Macoun, Logie, Burgess, &c.*) Along the Canadian Pacific Railway, north of Lakes Huron and Superior, Ont. (*Fletcher.*) Current River, Lake Superior, Ont. (*Macoun.*)

(2995.) **A. Filix-femina**, Bernh., Schrad. N. Journ. Bot., ii., 26 and 48. Provancher, Fl. Can., 716. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 194.

Athyrium Filix-femina, Roth, Tent. Fl. Germ., ii., 65. Hook., Fl. Bor-Am., ii., 262. Lawson, Can. Nat., i., 277; Fern Fl. Can., 238. Watt, Can. Nat., iv., 363.

Nephrodium Filix-femina, Michx., Fl. Bor-Am., ii., 268.

Nephrodium asplenoides, Michx., Fl. Bor-Am., ii., 263.

Aspidium asplenoides, Swartz, Syn. Fil., 60. Pursh, Fl. Am. Sept., ii., 664.

A very variable species which grows in tufts in moist fields and woods. It is common in most parts of British America from the Atlantic to the Pacific. Quite common throughout Nova Scotia. (*Ball.*) A very common and variable fern in New Brunswick. (*Fowler.*) Abundant in Prince Edward Island. (*Bain.*) Very common in Quebec and Ontario. (*Lawson, McCord, Macoun, Burgess, St. Cyr, &c.*) Common in wooded parts of Manitoba and the North-West Territory, in the Rocky Mountains, and in British Columbia. (*Macoun.*) Throughout Canada to the Saskatchewan and alpine woods of the Rocky Mountains. (*Drummond.*)

Var. **Michauxii**, Mett., Asplenium, 199.

Aspidium angustum, Willd., Sp. Pl., V., 277.

Athyrium Filix-femina, Roth., var. β ., Hook., Fl. Bor-Am., ii., 262.

Asplenium Filix-femina, var. *angustum*, D. C. Eaton, Ferns of N. Am., ii., 277. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 195.

This is perhaps the most distinct of the many forms of this fern which have been described. It is less common than the type, but not

extremely rare, especially in Ontario. Salt Mountain, Whyecogmah, N.S. (*Macoun, Burgess.*) Farmersville and Delta, Ont. (*Lawson.*) Ottawa, Ont. (*Fletcher.*) Belleville, Ont. (*Macoun.*) London, Ont. (*Burgess.*)

**750. SCOLOPENDRIUM, Smith, Acta. Taur., v. 410.
(HART'S-TONGUE.)**

(2996.) **S. vulgare**, Smith, Mém. Acad. Turin, v., 421. Hook. & Baker, Syn. Fil., 246. Lawson, Can. Nat., i., 278. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 195. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 12.

S. officinarum, Swartz, Schrad. Journ., ii., 61; Syn. Fil., 89. Pursh, Fl. Am. Sept., ii., 667.

One of the rarest of American ferns, and is found growing in tufts in wet shade on limestone rocks. Only three stations are known in Canada. Woodstock, N.B. (*Sutton, Jack.*) Abundant on limestone debris under the cliffs at Sydenham Falls and other localities around Owen Sound, Ont. (*Mrs. Roy.*) On Guelph dolomites, Little Sau-River, Durham, Grey Co., Ont. (*H. M. Ami.*) It is a very variable species and three of the forms, which have been known, respectively, as vars. *marginatum*, *ramosum*, and *multifidum*, were collected near Woodstock, N.B., by Mr. Jack.

**751. CAMPTOSORUS, Link, Sp. Fil. Berol., 83.
(WALKING-LEAF.)**

(2997.) **C. rhizophyllus**, Link, Hort. Berol., ii., 69. Lawson, Can. Nat., i., 279. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 196.

Asplenium rhizophyllum, Linn., Sp. Pl., 1536. Swartz, Syn. Fil., 74. Michx., Fl. Bor.-Am., ii., 264. Provancher, Fl. Can., 715.

Occurs on shaded, mossy, limestone rocks. Montreal Mountain, Que. (*Provancher.*) L'Abord à-Plouffe, rear of the Island of Montreal, Que. (*McCord.*) Isolated rocks in a shaded pasture, Hemmingford, Que. (*Goode.*) Limestone rocks west of Hull, and in a ravine near King's Mere, Chelsea, Que. (*Fletcher.*) Rocky woods, near Oxford Station, on the Ottawa and Prescott Ry., Ont. (*Billings.*) Crevices of limestone

rocks at the railway bridge, Shannonville, and on boulders beyond the "Big Spring" on the Marmora Road, Hastings Co., Ont.; abundant on broken masses of rock at Foster's Flats, Niagara Falls, Ont.; plentiful at Owen Sound, Ont., on boulders and ledges under the cliffs. (*Macoun.*) Hamilton and Ancaster, Wentworth Co., and Lake Medad, Halton Co., Ont. (*Logie.*) On shaded, mossy masses of limestone fallen from the cliffs in "The Ravine," Dundas, and at Beamsville, Ont. (*Burgess.*) Canada (*Goldie.*) to the Saskatchewan (*Drummond.*), in Hook., Fl. Bor.-Am.

752. PHEGopteris, Fée, Gen. Fil., 242.
(BEECH-FERN.)

(2998.) **P. polypodioides**, Fée, Gen. Fil., 243. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 197.

Polypodium Phegopteris, Linn., Sp. Pl., 1550. Swartz, Syn. Fil., 40. Hook., Fl. Bor.-Am., ii., 258. Provancher, Fl. Can., 713. Lawson, Can. Nat., i., 269.

Polypodium connectile, Michx., Fl. Bor.-Am., ii., 271. Pursh, Fl. Am. Sept., ii., 659.

Phegopteris connectile, Watt, Can. Nat., iv., 363. Lawson, Fern Fl. Can., 247.

Occurs in damp, especially rocky woods, and on hillsides, and is commonest in the Eastern Provinces. Common and generally distributed throughout Nova Scotia. (*Ball.*) Common in New Brunswick. (*Fowler.*) Common in Quebec. (*D'Urban, Brunet, McCord, St. Cyr, &c.*) Very luxuriant on the Island of Anticosti and shore of the Lower St. Lawrence, Que.; woods, at Brackley Point, Prince Edward Island; abundant around Lake Superior, Ont.; rather scarce along Lake Manitoba and the Porcupine Mountains, Man.; near the line of the Canadian Pacific Ry. in the valley of Beaver Creek, Selkirk Mountains, and in the Gold Range at Griffin Lake, B.C., both on stumps and on rocks along mountain torrents. (*Macoun.*) Prescott, Grenville Co., and Osgoode Station, Russell Co., Ont. (*Billings.*) Ottawa, and along the C. P. Ry. north of Lakes Huron and Superior, Ont. (*Fletcher.*) Near the sources of the Columbia on Portage River, Rocky Mountains, Lat. 52°. (*Drummond.*) Shaded, rocky places, Port Simpson, B.C. (*Anderson.*)

(2999.) **P. hexagonoptera**, Fée, Gen. Fil., 243. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 198.

Polypodium hexagonopterum, Michx., Fl. Bor.-Am., ii., 271. Pursh, Fl. Am. Sept., ii., 659. Lawson, Can. Nat., i., 268. Hook. & Baker, Svn. Fil., 309.

Polypodium Pheopteris, var. *majus*, Hook., Fl. Bor.-Am., ii., 258.

This species is found in rich, open woods, and, in south-western Ontario, seems to take the place of *P. polypodioides*, from which species it is sometimes difficult to separate it. Quebec, Que. (*Sheppard*.) Nun's Island, Montreal, Que. (*Parsons*.) Rare in Miriwin's Woods, near Prescott, Ont. (*Billings*.) Rocky woods, near Campbellford, Northumberland Co., and in thickets at Port Stanley, Elgin Co., Ont. (*Macoun*.) Rich woods near the Waterworks Reservoir, Toronto, and at London, St. Thomas, and Windsor, Ont. (*Burgess*.) Chippewa, Ont. (*MacLagan*.) Parry Sound, Ont. (*Logie*.)

(3000.) **P. Dryopteris**, Fée, Gen. Fil., 243. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 198.

Polypodium Dryopteris, Linn., Sp. Pl., 1555. Swartz, Syn. Fil., 41. Hook., Fl. Bor.-Am., ii., 259. Lawson, Can. Nat., i., 269. Provancher, Fl. Can., 713.

Polypodium calcareum, Pursh, Fl. Am. Sept., ii., 659 (not of Smith and Willdenow.)

Nephrodium, Dryopteris, Michx., Fl. Bor.-Am., ii., 270.

Common in rocky woodlands from Nova Scotia to British Columbia, and extending northward to the Arctic Circle. To be met with in most localities in Nova Scotia. (*Ball*.) Common in New Brunswick. (*Fowler*.) Common on Prince Edward Island, and along Lakes Manitoba and Winnipegosis, and in the Riding, Duck, and Porcupine mountains, Man., also in the Rocky Mountains, British Columbia and Vancouver Island. (*Macoun*.) Abundant in Quebec. (*MacLagan, D'Urban, Provancher, St. Cyr, &c.*) Common in rocky parts of Ontario. (*Billings, Macoun, Burgess, &c.*) Along the C. P. Ry. north of Lakes Huron and Superior. (*Fletcher*.) At intervals from Lake Winnipeg to within fifty miles of Hudson Bay, and on Clearwater River, N. W. Ter. (*J. M. Macoun*.) Echimamish River to Oxford House, Keewatin. (*R. Bell*.) Rocky Mountains and Great Bear Lake, Lat. 66°. (*Hook*, in Fl. Bor.-Am.) British Columbia. (*Dawson*.) Victoria and Port Simpson, B.C. (*Anderson*.)

Var. **Robertianum**, Dav., Suppl. Cat. Dav. Herb., 47.

P. calcarea, Fée, Gen. Fil., 243. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 199.

Polypodium Robertianum, Hoff.; Moore, Nat. Pr. Brit. Ferns, t. vi. Lawson, Can. Nat., i., 270.

Polypodium Dryopteris, var. *calcareum*, Gr., Man., Ed. 2., 590.

Is distinguished from the type by its glandular stalks and fronds. Abundant on ledges of limestone about two miles up the left bank of the Beesie River, Island of Anticosti, Que. (*Macoun.*) Not rare in low woods at the base of limestone cliffs, and in crevices of the cliffs themselves, at the mouth of the Temiscami River, Lake Mistassini, N. E. Ter. (*J. M. Macoun.*) Lake of the Woods, Man. (*Dawson.*) About one hundred miles north-east of Lake of the Woods, near Lonely Lake (Lac Seul), Ont. (*R. Bell.*)

- (3001.) ***P. alpestris***, Mett., Fil. Hort. Lips., 83. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 200. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 13.

Polypodium alpestre, Hoppe; Spreng. Syst. Veg., iv., par. ii., 320. Hook. & Baker, Syn. Fil., 311.

Aspidium alpestre, Swartz, Syn. Fil., 421.

Athyrium alpestre, Nylander; Lawson, Fern Fl. Can., 238.

It has a strong general resemblance to *Asplenium Filix-femina*, from which, however, it is distinguishable by the absence of indusia. Cascade Mountains, B.C., about Lat. 49°. (*Lyall.*) In wet places, at an altitude of 7000 feet, on the slopes below the glacier along Bear Creek at the summit of the Selkirk Mountains, near the line of the C. P. Ry., and also abundant under the cliffs, at a height of 6000 feet, near the summit of the Gold Range north of Griffin Lake, B.C. (*Macoun.*)

753. ASPIDIUM, Swartz, Schrad. Journ., i. and ii., St. 4 and 29. (SHIELD-FERN.)

- (3002.) ***A. Noveboracense***, Swartz, Syn. Fil., 55. Pursh, Fl. Am. Sept., ii., 661. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 200.

Dryopteris Noveboracensis, Gr., Man., ed. i., 630.

Lastrea Noveboracensis, Presl, Tent. Pterid., 75. Lawson, Can. Nat., i., 284; Fern Fl. Can., 244.

Nephrodium thelypteroides, Michx., Fl. Bor.-Am., ii., 267.

Aspidium thelypteris, Hook., Fl. Bor.-Am., ii., 260, not of Swartz.

Aspidium thelypteris, var. *noveboracense*, Willd.; Provancher, Fl. Can., 718.

* *Polystichum Noveboracense*, Watt, Can. Nat., iv., 363.

Found in grassy swamps, moist woods and thickets, and is most common in the Maritime Provinces, finding its western limit in Ontario. Common in swamps and moist places in Nova Scotia. (*Ball.*) Very

common in New Brunswick. (*Fowler*.) Not rare in Prince Edward Island. (*Bain*, *Macoun*.) Quebec and Montreal, Que. (*Sheppard*.) Lévis, Que. (*St. Cyr*.) Richmond and Drummond Co's, Que. (*Bothwell*.) Mount Belœil, Que. (*MacLagan*.) Ottawa, Ont. (*Fletcher*.) Prescott, Ont. (*Billings*.) Kingston and Lakefield, Ont. (*Mrs. Traill*.) Abundant in pine woods, Seymour, Northumberland Co., Ont. (*Macoun*.) Low woods and thickets, Toronto, London, Blenheim, Windsor, and Port Cockburn, Ont. (*Burgess*.) Owen Sound, Ont. (*Mrs. Roy*.) Gore Bay, Manitoulin Island, Ont. (*J. Bell*.)

- (3003.) **A. Thelypteris**, Swartz, Schrad. Journ., ii., 40; Syn. Fil., 50. Pursh, Fl. Am. Sept., ii., 661. Provancher, Fl. Can., 718. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 201.

Polystichum Thelypteris, Roth, Fl. Germ., iii., 77. Watt, Can. Nat., iv., 363. *Nephrodium Thelypteris*, Desv., Mém. Soc. Linn., vi., 257. Hook. & Baker, Syn. Fil., 271.

Lastrea Thelypteris, Presl, Tent. Pterid., 76. Lawson, Can. Nat., i., 283; Fern Fl. Can., 244.

Common in cedar, tamarack and other swamps, from Nova Scotia westward to Lake Winnipeg. Quite abundant in swamps throughout Nova Scotia. (*Ball*.) Rather common in wet marshy places in New Brunswick. (*Fowler*.) Frequent in Prince Edward Island. (*Bain*, *Macoun*.) Common in Quebec. (*McCord*, *Provancher*, *MacLagan*, *Parsons*, *St. Cyr*, &c.) Abundant in Eastern and Central Ontario. (*Macoun*, *Fletcher*, *Billings*, *Logie*, *Burgess*, &c.) Muskoka and Parry Sound, Ont. (*Burgess*.) Near Red River Settlement, Man. (*McTavish*.)

- (3004.) **A. Oreopteris**, Swartz, Schrad. Journ., ii., 35; Syn. Fil., 50. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 14.

A. montanum, Milde, Fil. Eur. et Atlant., 115.

Lastrea Oreopteris, Presl, Tent. Pterid., 76.

Lastrea montana, Moore; Lawson, Fern Fl. Can., 243.

Occurs in patches on wet ground on mountain slopes and in rocky ravines, and is limited in Canada, so far as known, to British Columbia. At an altitude of 6,500 feet on Avalanche Mountains, at the summit of the Canadian Pacific Railway pass through the Selkirk Range. (*Macoun*.) Port Simpson, opposite the southern extremity of Alaska. (*Macoun*.)

- (3005.) **A. cristatum**, Swartz, Schrad. Journ., ii., 37; Syn. Fil., 52. Pursh, Fl. Am. Sept., ii., 661. Hook., Fl. Bor.-Am., ii., 261.

Provancher, Fl. Can., 718. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 202.

Polystichum cristatum, Roth, Tent. Fl. Germ., iii., 84. Watt, Can. Nat., iv., 363.

Nephrodium cristatum, Michx., Fl. Bor.-Am., ii., 269. Hook. & Baker, Syn. Fil., 273.

Lastrea cristata, Presl, Tent. Pterid., 77. Lawson, Can. Nat., i., 282; Fern Fl. Can., 241.

Usually found in low woods, ranging from the Atlantic to the Rocky Mountains, and northward as far as Great Slave Lake. Common in Nova Scotia. (Ball, McKay.) Scarce in New Brunswick, the only recorded stations being: Bass River, Green Head. (Fowler, Hay), and Andover and Upper Gaspereaux. (Wetmore.) Abundant in beech woods, Prince Edward Island. (Bain.) Not uncommon in Quebec. (D'Urban, Provancher, McCord, St. Cyr, &c.) Local but common in Ontario. (Macoun, MacLagan, Billings, Burgess, Fletcher, &c.) Porcupine Mountains, Man. (Macoun.) Saskatchewan, N.W.T. (Richardson.) Lake Winnipeg and Slave River, N.W.T. (Eaton.)

Var. **Clintonianum**, D. C. Eaton, Gr. Man., ed. v., 665. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 203.

Distinguished chiefly by its greater size and more numerous pinnae and segments. Ste. Rose, Laval Co., Que. (St. Cyr.) Chatham Township, Argenteuil Co., Que. (McCord.) Border of woods, Alva Farm, Knowlton, Que., and Dow's Swamp, Ottawa, Ont. (Fletcher.) Black ash swamps, Belleville; also Flat Rock Portage, Lake Nepigon, Ont. (Macoun.) Swamps, London, Ont. (Burgess.) Owen Sound, Ont. (Mrs. Roy.)

(3006.) **A. Goldieanum**, Hook., Edinb. Phil. Journ., vi., 333; Fl. Bor.-Am., ii., 260. Provancher, Fl. Can., 718. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 203.

Nephrodium Goldieanum, Hook. & Grev., Ic. Fil., t. cii. Hook & Baker, Syn. Fil., 272.

Lastrea Goldieana, Presl, Tent. Pterid., 76. Lawson, Can. Nat., i., 282; Fern Fl. Can., 240.

Aspidium Filix-mas, Pursh, Fl. Am. Sept., ii., 662.

Found in low rich woods and rocky ravines, but is nowhere common in our territory. Near Woodstock, N.B. (Jack.) Ste. Rose, Laval Co., Que. (St. Cyr.) Richmond and Drummond Co's, Que. (Bothwell.) "The Mountain," Montreal, Que. (McCord.) Abundant among gneiss

rocks near Hamilton's Farm, River Rouge, Que. (*D'Urban.*) Nun's Island, Montreal, Que. (*Parsons.*) Ottawa, Ont. (*Fletcher.*) Farmersville, and banks of river westward of Brockville, Ont., in crevices of Laurentian rocks. (*Lawson.*) Woods, Belleville, Castleton, and Brighton, Ont. (*Macoun.*) Woodstock, Ont. (*Millman.*) Rich woods, London, Ont. (*Burgess.*) Amherstburgh, Ont. (*MacLagan.*)

- (3007.) **A. Filix-mas**, Swartz, Schrad. Journ., ii., 38; Syn. Fil., 55. Goode, Can. Nat., ix., 297. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 204.

Polystichum Filix-mas, Roth, Fl. Germ., iii., 82. Watt, Can. Nat., iv., 363.

Nephrodium Filix-mas, Richard, Desv., Mém. Soc. Linn., vi., 60. Hook.

& Baker, Syn. Fil., 272 (exclusive of vars. γ and δ .)

Lastrea Filix-mas, Presl, Tent. Pterid., 76. Lawson, Can. Nat. i., 282;

Fern Fl. Can., 241.

Occurs in rocky woods and on open, rocky hillsides. Whycocogmah, Cape Breton, N.S. (*Lindsay.*) Aspey Bay, Lake Ainslie, and Cape Mabou Mountain, Cape Breton, N.S. (*McKay.*) Keswick Ridge, N.B. (*Moser.*) Daley's Wood, Richmond, N.B. (*Hay.*) Abundant and very luxuriant along the Gaspé coast, at Fox River, Que.; plentiful on the line of the C. P. Ry. on the lower slopes of Mount Macdonald, near Bear Creek, summit of the Selkirk Range, B.C. (*Macoun.*) Among loose rocks under the limestone cliffs at the rear of Royston Park, Owen Sound, Ont., and about ten miles up the Georgian Bay, under the same range of cliffs. (*Mrs. Roy.*) British Columbia. (*Lyall.*)

- (3008.) **A. rigidum**, Swartz, Schrad. Journ., ii., 37; Syn. Fil., 53. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 205.

Nephrodium rigidum, Desv., Ann. Linn., vi., 261.

Lastrea rigida, Presl, Tent. Pterid., 77. Lawson, Fern Fl. Can., 243.

Found growing in tufts among rocks on mountain sides. Mount Finlayson, near Victoria, Vancouver Island, B.C. (*Cowley, Anderson.*) The southern Pacific coast form, var. *argutum*, presents, according to Prof. Eaton, no points of specific difference from ours, which is typical *rigidum*, except that its fronds are larger and broader.

- (3009.) **A. marginale**, Swartz, Syn. Fil., 50; Pursh, Fl. Am. Sept., ii., 662; Hook., Fl. Bor.-Am., ii., 260; Provancher, Fl. Can. 718. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 205.

Nephrodium marginale, Michx., Fl. Bor.-Am., ii., 267. Hook. & Baker, Syn. Fil., 273.

Lastrea marginalis, Presl, Tent. Pterid., 77. Lawson, Can. Nat., i., 281; Fern Fl. Can., 242.

Polystichum marginale, Watt, Can. Nat., iv., 363.

This species especially favours rocky, wooded ravines and hillsides, occurring abundantly from the Maritime Provinces to the Lake of the Woods, thence, but very sparingly, to the Rocky Mountains. Generally distributed throughout Nova Scotia. (Ball.) Rather common in New Brunswick. (Fowler.) Not rare in Prince Edward Island. (Bain.) Common in Quebec. (Provancher, McCord, Sheppard, St. Cyr, &c.) Very common in Ontario. (Lawson, Macoun, Billings, Burgess, &c.) Abundant in the Muskoka and Parry Sound districts of Ontario, and along the Dawson Road, Man. (Burgess.) Split Rock Portage, on the Nepigon River, Ont., and in Peace River Pass, Rocky Mountains, Lat. 56°. (Macoun.) The Saskatchewan. (Drummond.)

- (3010.) **A. spinulosum**, Swartz, Schrad. Journ., ii, 38; Syn. Fil., 54. Hook., Fl. Bor.-Am., ii, 261. Provancher, Fl. Can., 719. Macoun & Burgess, Trans. Roy. Soc. Can., ii, sect. iv., 206.

Nephrodium spinulosum, Desv., Ann. Linn., vi, 261. Hook. & Baker, Syn. Fil., 275.

Lastrea spinulosa, Presl, Tent. Pterid., 76. Lawson, Fern Fl. Can., 242.

A partially evergreen fern finding its favorite home in thick, especially damp, woods. It is frequent in the wooded districts of all our provinces and ranges northward to Alaska.

- Var. **intermedium**, D. C. Eaton, Gray, Manual, Ed. v., 665. Macoun & Burgess, Trans. Roy. Soc. Can., ii, sect. iv., 207.

Aspidium intermedium, Willd. J, Sp. Pl., v, 262. Pursh, Fl. Am. Sept., ii, 663.

Lastrea intermedia, Presl, Tent. Pterid., 77.

Aspidium Americanum, Davenport, Am. Nat., xii, 714; Catal., 79.

This form, which prefers drier woods, has the same range as the type, but is most abundant in Eastern and Central Ontario.

- Var. **dilatatum**, Hook., Brit. Fl. ed. I., 444. Macoun & Burgess, Trans. Roy. Soc. Can., ii, sect. iv., 207.

Aspidium dilatatum, Swartz, Syn. Fil., 420.

Lastrea dilatata, Presl, Tent. Pterid., 77. Lawson, Can. Nat., i, 281.

Lastrea spinulosa, Presl, var. *dilatata*, Lawson, Fern Fl. Can., 240.

Like the type, it extends from the Atlantic, through the Rocky Mountains, to the Pacific, prevailing most extensively in the Eastern Provinces and British Columbia, where, in places, it forms almost the whole undergrowth. Not very common in Ontario except about Lake Superior.

- (3011.) **A. Boottii**, Tuckerman, Hovey's Mag. of Hort. and Bot., ix., 145. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 208.

A. spinulosum, var. *Boottii*, Gray, Man., Ed. ii., 598.

A. cristatum, var. *uliginosum*, Milde, Fil. Eur. et Atlant., 131.

Lastrea Boottii, Lawson, Fern Fl. Can., 241.

Our recorded stations for this fern, which is found in swamps and wet places in woods and thickets, are very few, but careful search would probably prove it to be less rare. Bellahill, thirteen miles from Halifax, and near Sackville Church, two and a half miles further up the old Windsor Road, N.S. (*Jack*.) Low forest glade, Kemptville, Ont. (*Porter*.) Swamp near the Grand Trunk Railway Station at Belleville, Ont., growing in the immediate vicinity of *A. cristatum*, var. *Clintonianum* and *A. spinulosum*. (*Macoun*.) Hamilton, Ont. (*Logie*.) With *A. cristatum*, in a cedar swamp, London, Ont. (*Burgess*.)

- (3012.) **A. fragrans**, Swartz, Syn. Fil., 51. Hook., Fl. Bor.-Am., ii., 261. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 208.

Polystichum fragrans, Ledeb., Fl. Ross., iv., 514. Watt, Can. Nat., iv., 383.

Nephrodium fragrans, Rich., App. Frankl. Journ., 753. Hook. & Baker, Syn. Fil., 275.

Lastrea fragrans, Presl, Tent. Pterid., 76. Lawson, Can. Nat., i., 283; Fern Fl. Can., 243.

Found in the crevices of shaded cliffs, and on mossy rocks, especially near cascades, from Nova Scotia to the Rocky Mountains and northward to the Arctic Circle. Hartley Water-fall, Pirate Harbour, Strait of Canso, N.S. (*Ball*.) Clefts of rocks at the Railway Tunnel, Restigouche, N.B. (*Fowler*.) Dalhousie, N.B. (*Fletcher*.) Saguenay River, Que. (*Watt*.) Hemmingford, Que. (*Goode*.) Perpendicular rocks at the Falls of Ste. Anne des Monts River, and along the Telegraph Road, Gaspé, Que.; Pic Island, and along cliffs on the shore of Thunder Bay above that island, McKay's Mountain, Thunder Cape, and Red Rock Station, C. P. Ry., north shore of Lake Superior, Ont.; very abundant on trap rocks on the upper part of Nepigon River and all around Lake Nepigon, being the common fern in that region; Dawson Road, Ont.; Peace River Pass in the Rocky Mountains, above Hudson's Hope in the Canyon, Lat 56° 12'. (*Macoun*.) Crevices of rocks on Moon River, Muskoka, Ont. (*Burgess*.) East coast of Hudson Bay, Cape Chudleigh and Cape Prince of Wales, Hudson Strait. (*R. Bell*.) Rocks about Chipecywan, Athabasca District. (*Traill*.) Great Bear Lake, N. W. Ter. (*Hooker*.) The Saskatchewan to the Arctic Sea and Islands. (*Richardson*, *Parry*.) Francis River, N.W.T. (*Dawson*.)

- (3013.) **A. Lonchitis**, Swartz, Schrad. Journ., ii., 30; Syn. Fil. 43. Hook., Fl. Bor.-Am., ii., 261. Hook. & Baker, Syn. Fil., 250. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 209. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 15.

Polystichum Lonchitis, Roth, Tent. Fl. Germ., iii., 71. Lawson, Can. Nat., i., 285; Fern Fl. Can., 239. Watt, Can. Nat., iv., 363.

Grows in tufts in shaded, rocky places, usually on the debris of calcareous rocks, and, except in the Rocky Mountains, is a rare and local species, as far as known. In considerable abundance near Aspey Bay, Cape Breton, N.S. (*McKay*.) Found sparingly at Foster's Flats, below the Whirlpool, Niagara Falls, Ont.; common on rocky ground, especially under cliffs, throughout the Bruce Peninsula, and around Owen Sound, Ont.; on the mountain slopes of Bow River Pass, and in Peace River Pass, Lat. 56°, Rocky Mountains, N. W. Ter.; on the upper slopes of Cathedral Mountain at Kicking Horse Lake, on the snowslides near the summit of the Selkirk Mountains; in the Cascade Mountains above Yale, and on the Gold Range north of Griffin Lake, B.C. (*Macoun*.) Kootanie Pass, Rocky Mountains, Lat. 49°, at 6,500 feet elevation. (*Dawson*.) Rocky Mountains, Lat. 52°—56°. (*Drummond*.) On rocks along the Arctic coast from the Mackenzie River to Baffin Bay. (*Hook*. Arct. Pl.)

- (3014.) **A. acrostichoides**, Swartz, Syn. Fil., 44. Pursh, Fl. Am. Sept., ii., 661. Hook., Fl. Bor.-Am., ii., 261. Hook. & Baker, Syn. Fil., 250. Provancher, Fl. Can., 718. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 210. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 16.

Nephrodium acrostichoides, Michx., Fl. Bor.-Am., ii., 267.

Polystichum acrostichoides, Schott, Gen. Fil. Lawson, Can. Nat., i., 285; Fern Fl. Can., 239. Watt, Can. Nat., iv., 363.

Polystichum munitum, Presl, Tent. Pterid., 83. Lawson, Fern Fl. Can., 239.

An evergreen, tufted species, found in woods and on wooded hillsides, especially in rocky soil. It occurs from Nova Scotia to the Bruce Peninsula of Ontario, which seems to be about its western limit in Canada. Quite common in Nova Scotia, (*Ball*.) Common near St. John; rare near Molus River, Kent Co., N.B. (*Fowler*.) Woodstock, N.B. (*Jack*.) Upper Tobique and Kennebecasis, N.B. (*Hay*.) Common at Salmon River, N.B. (*Wetmore*.) Not rare in Prince Edward Island. (*Bain*.) Common in Quebec. (*Provancher*, *D'Urban*, *MacLagan*, *Bothwell*, *Sheppard*, *St. Cyr*, &c.) Very abundant in Eastern, Central, and South-western Ontario. (*Macoun*, *Lawson*, *Logie*, *Fletcher*, *Burgess*,

&c.) The form known as var. *incisum* has been reported from Montreal, Que. (McCord.) Owen Sound, Ont. (Macoun.) London and Hamilton, Ont. (Burgess.)

- (3015.) **A. munitum**, Katif, Enum. Fil., 236. Hook., Fl. Bor.-Am., ii., 261. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 211.

An evergreen species, growing in woods and among rocks, confined with us to British Columbia. North-West America. (Menzies.) Nootka, Vancouver Island. (Mertens.) Very abundant around Victoria, and common in rocky woods up the Fraser River to far above Yale, also on mountain slopes at Griffin Lake, Eagle River. (Macoun.) Damp thickets, New Westminster. (Fletcher.) The forms which have been described as var. *inciso-serratum* and var. *imbricans* have been found about Victoria, the former by Prof. Macoun, the latter by Mr. Fletcher.

- (3016.) **A. aculeatum**, Swartz, Schrad. Journ., ii., 37; Syn. Fil., 53. Hook. & Baker, Syn. Fil., 252. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 211. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 16.

A. lobatum, Smith, Fl. Brit., 1113. Swartz, Syn. Fil., 53.

A. aculeatum, var. *lobatum*, Kunze, Bot. Zeit. (1848), 356. Eaton, Ferns of N. Am., ii., 124.

Our only known station for typical *A. aculeatum* is Port Simpson, Northern B. C., where it was collected, in moist rocky places, by Mr. Anderson, in 1885. Further research in that district will probably prove it to be less rare.

- Var. **Braunii**, Doell (Koch), Rhein. Fl., 27. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 212.

Aspidium Braunii, Spenner, Fl. Frib., i., 9.

A. aculeatum, Pursh, Fl. Am. Sept., ii., 662. Hook., Fl. Bor.-Am., ii., 261.

Provancher, Fl. Can., 719.

Polystichum angulare, Presl, var. *Braunii*, Lawson, Can. Nat., i., 285.

Polystichum aculeatum, Moore, var. *Braunii*, Watt, Can. Nat., iv., 363.

Polystichum Braunii, Lawson, Fern Fl. Can., 239.

Found in the crevices of moist, shaded rocks, and in rocky woods, its range being restricted to the Provinces of Nova Scotia, New Brunswick, Quebec, and British Columbia. Rare and local in Nova Scotia; occurring at Marble Mountain, Bras d'Or Lake; Sherman's Mountain, Port Mulgrave, Strait of Canso; Ehler's Waterfall, near Guysborough; and

hills above Mabou, Cape Breton. (*Ball.*) Lake Ainslie, Cape Breton. (*McKay.*) Near Baddeck, and at River Inhabitans, Cape Breton. (*Jack.*) Pirate Harbour, Strait of Canso, N.S. (*Macoun & Burgess.*) Cape Blomidon, N.S. (*Lawson.*) Sugar Loaf, Restigouche; and Odell's Grove, Fredericton, N.B. (*Fowler.*) St. Francis River, Andover, N.B. (*Hay.*) Plentiful in rocky woods along the Gaspé Coast, Que., generally near the shore and often within the spray of the waves. (*Macoun.*) Quebec, Que. (*Sheppard.*) Temiscouata, Que. (*Thomas.*) Isle of Orleans, Que. (*St. Cyr.*) Abundant on gneiss rocks and damp logs, valley of the River Rouge, Argenteuil Co., Que. (*D'Urban.*) Portage and sources of the Columbia River, west side of the Rocky Mountains, Lat. 52°. (*Drummond.*) Nootka, Vancouver Island, B.C. (*Henke.*)

Var. **scopulinum**, D. C. Eaton, Ferns of N.A., ii., 125. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 212.

A form with narrow fronds, much resembling those of *A. mohrioides*, found growing in the crevices of rocks. In Canada only known to exist on Mount Albert, Shickshock Mountains, Gaspé, Que., where it was found, at an altitude of about 4000 feet, by Professor Allen, in July 1881, and by Professor Macoun, in August 1882. Having been found in Washington Territory, U.S., it is to be looked for in Southern British Columbia.

754. CYSTOPTERIS, Bernh., Schrad. Neu. Journ. Bot., i., part ii., 526. (BLADDER-FERN.)

(3017.) **C. fragilis**, Bernh., l.c., part i., 27. Hook., Fl. Bor.-Am., ii., 260. Lawson, Can. Nat., i., 286. Provancher, Fl. Can., 719. Goode, Can. Nat., ix., 298. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 213.

Cystea fragilis, Smith, Engl. Fl., iv., 285. Watt, Can. Nat., iv., 363.

Nephrodium tenue, Michx., Fl. Bor.-Am., ii., 269.

Aspidium tenue, Swartz, Syn. Fil., 53. Pursh, Fl. Am., Sept., ii., 665.

A common and very variable species, found in crevices of moist shaded rocks, in rich woods, and sometimes in open wet places. It is one of the most universally distributed of our ferns, appearing in almost every part of the Dominion, growing even on the open prairie in moist places near rocks. It is so variable that the same roots will at different times, or even the same time, produce fronds that might be referred to different ones of the many, so-called, varieties.

- (3018.) **C. bulbifera**, Bernh., l.c., part i., 27. Hook. Fl. Bor.-Am., ii., 260. Provancher, Fl. Can., 719. Lawson, Can. Nat., i., 287. Goode, Can. Nat., ix., 299. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 214.

Polypodium bulbiferum, Linn., Sp. Pl., 1553.

Aspidium bulbiferum, Swartz, Schrad. Journ. Bot., ii., 41; Syn. Fil., 59.

Pursh, Fl. Am. Sept., ii., 663.

Cystea bulbifera, Smith, Engl. Fl., iv., 286. Watt, Can. Nat., iv., 363.

Nephrodium bulbiferum, Michx., Fl. Bor.-Am., ii., 268.

Aspidium atomarium, Muhl., MS. Pursh, Fl. Am. Sept. ii., 665.

A slender, tufted species, occurring in wet places among rocks, or in low rich woods. It is found in Nova Scotia and New Brunswick, though not common, and extends westward to the Lake of the Woods. Hartley's Waterfall, Pirate Harbour, Strait of Canso, N.S. (Ball.) Aspey Bay, Cape Breton. (McKay.) Newport, Hants Co., N.S.; and Grand Falls, N.B. (Jack.) Very abundant about the Lower St. John, Coldbrook, N.B. (Hay.) Restigouche and St. John, N.B. (Fowler.) On damp limestone rocks up Jupiter River, Island of Anticosti, Que. (Macoun.) Common in Quebec. (Provancher, D'Urban, Bell, MacLagan, McCord, St. Cyr, &c.) Very abundant throughout Ontario, as far west as the Bruce Peninsula. (Lawson, Billings, Macoun, Logie, Burgess, &c.) Manitoulin Islands, Ont. (J. Bell.) Lake of the Woods. (Dawson.) North-west Angle, Lake of the Woods. (Burgess.)

- (3019.) **C. montana**, Bernh., l.c., part ii., 26. Hook., Fl. Bor.-Am., ii., 260. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 215. Burgess, Trans. Roy. Soc. Can. iv., sect. iv., 17.

Aspidium montanum, Swartz, Schrad. Journ. Bot., ii., 42; Syn. Fil., 61.

Cystea montana, Lam. Watt, Can. Nat. iv., 363.

One of our rarest ferns, finding its home in low, dense woods, generally along creeks. Labrador. (Butler.) In a deep ravine beside a brook, on the northern face of Mount Albert, Shickshock Mountains, Gaspé, Que.; in a cedar swamp, near the silver mine north of Current River, Lake Superior, Ont.; abundant in Kicking-Horse Pass, Rocky Mountains. (Macoun.) Plentiful along a spring creek, running through spruce woods, about ten miles from the H. B. Co.'s post on Lake Mistissini, N. E. Ter. (J. M. Macoun.) By streams, in shady alpine woods, in the Rocky Mountains, Lat 52°-56°. (Drummond.)

755. ONOCLEA, Linn., Gen. Pl., No. 1170. (ONOCLEA.)

- (3020.) **O. sensibilis**, Linn., Sp. Pl., 1517. Michx., Fl. Bor.-Am., ii., 272. Swartz, Syn. Fil., 110. Pursh, Fl. Am., Sept., ii., 665. Hook., Fl. Bor.-Am., ii., 262. Provancher, Fl. Can., 717. Lawson, Can. Nat., i., 274. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 215.

A very common fern throughout Canada, in wet, generally shaded places, as far west as the head of Lake Winnipegosis and the Saskatchewan.

The plant described as var. *obtusilobata* by Doctor Torrey in the Flora of New York, vol. ii., p. 499 (*Onoclea obtusilobata*, Schk., Krypt. Gew., 95. Pursh, Fl. Am. Sept., ii., 665) is only a form in which some, or all, of the sterile fronds are contracted and partially fruitful. It is recorded from but few localities but is probably of much more frequent occurrence. Richibucto, N.B. (Fowler.) Havelock, King's Co., N.B. (Brittain.) Prince Edward Island. (Bain.) Wet meadow, one mile north of Murray Town-Hall, Northumberland Co., Ont. (Macoun.) Ottawa, Ont. (Fletcher.) Saugeen, Ont. (P. J. Scott.)

- (3021.) **O. Struthiopteris**, Hoff., Fl. Deutschld., 11. Swartz, Syn. Fil., 111. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 216.

O. nodulosa, Schk., Krypt. Gew., 97. (Perhaps also of Michx., Fl. Bor.-Am., ii., 272.)

Struthiopteris Germanica, Willd., Enum., 1071. Hook., Fl. Bor.-Am., ii., 262. Gray, Man., ed. v., 667. Provancher, Fl. Can., 717.

Struthiopteris Pennsylvanica, Willd., Sp. Pl., v., 289. Pursh, Fl. Am. Sept., ii., 666.

Struthiopteris Germanica, var. *Pennsylvanica*, Lawson, Can. Nat., i., 273; Fern Fl. Can., 231.

A tall, showy species, found in low, open or wooded, especially alluvial, ground. Its range is from Nova Scotia to near the Pacific Coast in the valley of the Fraser River in British Columbia, but it is most common east of Lake Huron. Canada to the Saskatchewan. (Richardson.) About forty miles north of Michipicotin on the Magpie River, and about five miles up the Kaministiquia River, Lake Superior, Ont.; along the Assiniboine River, from Winnipeg to the Souris River, Man.; common along the C. P. Ry., east of Agassiz Station, and along Eagle River in the Gold Range, B.C., 1889. (Macoun.) North-west Angle, Lake of the Woods. (Burgess.)

756. WOODSIA, R. Br., Trans. Linn. Soc. Lond., xi., 170. (WOODSIA.)

(3022.) **W. glabella**, R. Br., App. Frankl. Journ. 754. Hook., Fl. Bor.-Am., ii., 259. Lawson, Can. Nat., i., 289. Watt, Can. Nat., iv., 363. Goode, Can. Nat., ix., 298. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 217. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 17.

W. alpina, var. *glabella*, Eaton, Can. Nat., ii., 89.

A very delicate little species found in tufts on moist, shaded rocks. It has a wide range, extending from New Brunswick westward to the Rocky Mountains, and northward to the Arctic Circle, but is rare and local. Restigouche River, N.B. (*J. Brittain*.) Grand Falls, N.B. (*Jack*.) Limestone rocks, twelve miles up Jupiter River, and under cliffs at Ellis Bay, Anticosti, Que.; frequent in crevices of rocks along the Gaspé coast, Ste. Anne des Monts River, and Rivière du Loup, Que.; ledges of rock, Kakabeka Falls, Kaministiquia River, Red Rock, near the C. P. Ry. station, and on trap rocks up the Nepigon River, Lake Superior, Ont.; limestone rocks, Pine Portage, Clearwater River, below Methy Portage, N. W. Ter., Lat 57°, and Bow River Pass, Rocky Mountains. (*Macoun*.) Saguenay River and Montmorenci Falls, Que. (*Watt*.) Isle of Orleans, Que. (*St. Cyr*.) Great Bear Lake (the original station) N. W. Ter. (*Richardson*.) On rocks along the Arctic coast, from Mackenzie River to Baffin Bay. (*Hook*., *Arct. Pl.*)

(3023.) **W. hyperborea**, R. Br., Trans. Linn. Soc. xi., 173. Hook., Fl. Bor.-Am., ii., 259. Hook. & Baker, Syn. Fil., 46. Provancher, Fl. Can., 720. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 218.

W. alpina, S. F. Gray, Nat. Arang. Brit. Pl., ii., 17. Lawson, Trans. Bot. Soc. Ed., viii., 108, and Can. Nat., i., 289.

This plant is closely allied to *W. glabella*, and, like it, is found on moist, mossy rocks. It occurs very locally from New Brunswick to the Saskatchewan, and northward to the Arctic Circle. "The Tunnel," Restigouche, N.B. (*Fowler*.) Aroostook Falls, Victoria Co., N.B. (*Hay*, *Wetmore*.) Dartmouth River, Gaspé, Que., twenty miles from its mouth. (*J. Bell*.) Perpendicular faces of cliffs near Cape Rosier, Gaspé; on rocks twenty miles up the Ste. Anne des Monts River, and at the falls of the same river at the base of Mount

Albert, Que.; on mountain masses along the north shore of Lake Superior west of Nepigon Bay, on cliffs of Jack Fish Island, Lake Nepigon, and on ledges of rock between the Hudson Bay Co.'s post and Lake Superior at Michipicotin, Ont. (*Macoun.*) On a moist, mossy bank, within reach of the spray, near the falls on the Rivière du Loup, and on mossy rocks in a ravine at Temiscouata, Que. (*Watt.*) Ile du Havre, Mingan, Que. (*St. Cyr.*) Norway House, Lake Winnipeg. (*Richardson.*) Rocks about Fort Chipewyan, Athabasca. (*W. G. Traill.*) Nottingham Island, Hudson Strait. (*R. Bell.*) On rocks along the Arctic coast, from the Mackenzie River to Baffin Bay. (*Hook., Arct. Pl.*) Greenland. (*Rosenvinge.*)

- (3024.) **W. livensis**, R. Br., Trans. Linn. Soc., xi., 273. Pursh, Fl. Am. Sept., ii., 660. Hook., Fl. Bor.-Am., ii., 259. Provancher, Fl. Can., 720. Lawson, Can. Nat., i., 288. Hook. & Baker, Syn. Fil., 46. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 219.

Nephrodium rufidulum, Michx., Fl. Bor.-Am., ii., 269.

Aspidium rufidulum, Swartz, Syn. Fil., 58. Pursh, Fl. Am. Sept., ii., 665.

A small, dull-green, tufted species occurring on exposed rocks, from Nova Scotia to the Rocky Mountains, and northward beyond the Arctic Circle. Not common in Nova Scotia. (*McKay.*) Salt Mountain, Whycocogmah, N.S. (*Lindsay.*) Gold River, near Chester, Lunenburg Co., N.S. (*Ball.*) East side of Lake Thomas, Halifax Co., N.S., and Hay's Falls, near Woodstock, N.B. (*Jack.*) Near Truro, N.S. (*Campbell.*) The "Look Out," Cape Blomidon, N.S. (*Macoun & Burgess.*) Sugar Loaf, Restigouche, and mouth of Upsalquitch, N.B. (*Fowler.*) Keswick, Nashwaaksis, St. Stephen, Green Head, and St. John, N.B. (*Vroom.*) Very abundant in many parts of Quebec and Ontario. (*Provancher, St. Cyr, D'Urban, Lawson, Macoun, Fletcher, Logie, Burgess, &c.*) Very abundant and luxuriant west and northwest of Lake Superior. (*Macoun.*) Echimamish River to Oxford House, and Nelson River, near Hudson Bay. (*R. Bell.*) Common up Berens River to the Height of Land. (*J. M. Macoun.*) Rocks about Chipecywan, Athabasca. (*W. G. Traill.*) Canada to Hudson Bay, Bear Lake, and the Rocky Mountains. (*Richardson, Drummond.*) Rocks along the Arctic coast from Mackenzie River to Baffin Bay, also in Arctic Greenland and along the east and northeast coast. (*Hook., Arct. Pl.*)

- (3025.) **W. obtusa**, Torrey, Cat. Pl. in Geol. Rept. of N.Y. (1840.) Fl. of N. Y., ii., p. 500. Lawson, Can. Nat., i., 289. Hook. &

Baker, Syn. Fil., 48. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 220. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 180.

Aspidium obtusum, Willd., Sp. Pl., v., 254. Pursh, Fl. Am. Sept., ii., 662.

Physenatum obtusum, Hook., Fl. Bor.-Am., ii., 259.

This fern, which is found on rocks and stony hillsides, is one of our rarest species, only three stations being recorded for it, and these strangely far apart. In the gorge through which Dr. Hamilton's Road winds up to the summit of North Mountain, near Canning, N.S. (Jack.) Amongst loose rocks at Port Simpson, Northern B.C. (Anderson.) West side of the Rocky Mountains, near the sources of the Columbia. (Drummond.)

(3026.) **W. scopulina**, D. C. Eaton, Can. Nat., ii., 91. Hook. & Baker, Syn. Fil., ed. 2, 48. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 220. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 18.

Found growing in dense masses on rocks and in their crevices, chiefly in shade, and confined with us, so far as known, to the Rocky Mountains, and British Columbia. Rocky Mountains; and Elk River, Kootanie Valley, B.C. (Dawson.) Among loose rocks on mountain sides at Lytton and Victoria, B.C. (Fletcher.) Along the Fraser and Thompson rivers, B.C., from Yale to Sicamous on Shuswap Lake, and on the mountains at these places; abundant in Kicking Horse Pass, Rocky Mountains. (Macoun.) Specimens thickly glandular on the upper as well as the lower surface have been collected by Mr. Anderson on Mount Finlayson, near Victoria, B.C.

(3027.) **W. Oregana**, D. C. Eaton, Can. Nat., ii., 90. Hook. & Baker, Syn. Fil., ed. 2, 48. Watt, Can. Nat., iv., 363. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 221. Burgess, Trans. Roy. Soc. Can., iv., sect. iv., 18.

A delicate little species occurring in dense patches in the crevices of rocks, often where exposed to the sun, and ranging from Lake Nepigon westward into British Columbia and northward to Lake Athabasca. Blackwater River, Lake Nepigon, Ont.; Fort Chipeywan, Athabasca; and Peace River Pass, Rocky Mountains; along the Fraser and Thompson rivers, B.C., from Yale to Spence's Bridge; on Blackwater River, along the Telegraph Trail, and at Fort St. James, Northern B.C. (Macoun.) Exposed rocks, Kamloops, B.C. (Fletcher.)

757. DICKSONIA, L'Her., Sert. Ang., 30. (DICKSONIA.)

- (3028.) **D. pilosiuscula**, Willd., Enum. Pl. Hort. Berol., 1076.
 Pursh, Fl. Am. Sept., ii., 671. Hook., Fl. Bor.-Am., ii., 264.
 Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 222.

Aspidium punctilobum, Willd., Sp. Pl., v., 279. Pursh, Fl. Am. Sept., ii., 664.

Dicksonia punctilobula, Kunze, Sill. Journ. (1848), 87. Gray, Man., 669.
 Provancher, Fl. Can., 720.

Nephrodium punctilobulum, Michx., Fl. Bor.-Am., ii., 268.

Dennstaedtia punctilobula, Moore, Index Fil., p. xcvi., 307. Lawson,
 Can. Nat., i., 287; Fern Fl. Can., 233.

Found in stony pastures, open woods, and on rocky hillsides, from the Atlantic westward to Georgian Bay. Very common in Nova Scotia. (*Ball.*) Abundant in New Brunswick. (*Fowler.*) Very abundant by roadsides at Brackley Point, Prince Edward Island; common in extreme eastern Quebec; frequent along the roadside between Flinton and the Addington Road, Addington Co., and in low, rich woods a little east of Norwood, Peterboro Co., Ont. (*Macoun.*) Lévis and Sillery, Que. (*St. Cyr.*) Lennoxville and Waterloo, Que. (*Sheppard.*) Richmond and Drummond Co's, Que. (*Bothwell.*) Montreal, Que. (*MacLagan.*) Plentiful in Harrington Township and on Hamilton's Farm, River Rouge, Argenteuil Co., Que. (*D'Urban.*) Abundant in Stewart's Bush, Ottawa, and at Casselman, Ont. (*Fletcher.*) Near Prescott, Ont. (*Billings.*) Near Kingston, Ont. (*J. Bell.*) Parry Sound, Georgian Bay, Ont. (*Logie.*)

758. SCHIZÆA, Smith, Act. Taur. v., 419. (SCHIZÆA.)

- (3029.) **S. pusilla**, Pursh, Fl. Am. Sept., ii., 657. Hook., Fl. Bor.-Am., ii., 265. Hook. & Baker, Syn. Fil., 428. Lawson, Can. Nat., i., 291. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 222.

This peculiar, sedge-like, little species is one of the rarest of ferns. Only one station is known in Canada, but it is recorded by De la Pylaie as occurring in a peat bog near St. Pierre, Newfoundland. Found among the rhizomes of *Osmunda regalis* on the shore of Grand Lake, twenty-three miles from Halifax, N.S., in August, 1879, by Miss Elizabeth G. Knight (now Mrs. Britton), but not since detected.

**759. OSMUNDA, Linn., Gen. Pl., No. 1172.
(FLOWERING-FERN.)**

- (3030.) ***O. regalis***, Linn., Sp. Pl., 1521. Swartz, Syn. Fil., 160. Michx., Fl. Bor.-Am., ii., 273. Hook. & Baker, Syn. Fil., 427. Provancher, Fl. Can., 721. Watt, Can. Nat., iv., 364. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 223.

O. spectabilis, Willd., Sp. Pl., v., 98. Pursh, Fl. Am. Sept., ii., 658. Hook., Fl. Bor.-Am., ii., 265.

O. regalis, var. *spectabilis*, Milde, Fil. Eur. et Atlant., 178. Lawson, Can. Nat., i., 290; Fern. Fl. Can., 247.

A tall-growing species of very common occurrence in wet places in most parts of the eastern half of our territory, though rare toward its western limit, which is the Saskatchewan. Observed north of Lake Superior at Round Lake, on the line of the Canadian Pacific Railway, twelve miles east of the Pic River, and at Current River, Thunder Bay, Ont. (*Macoun*.) Abundant around Lake Mistassini, N. E. Ter.; on Muskeg Island, Lake Winnipeg. (*J. M. Macoun*.) Through Canada westward to the Saskatchewan. (*Eaton*.)

- (3031.) ***O. Claytoniana***, Linn., Sp. Pl., 1521. Swartz, Syn. Fil., 160. Pursh, Fl. Am. Sept., ii., 657. Hook. & Baker, Syn. Fil., 426. Lawson, Can. Nat., i., 291. Watt, Can. Nat., iv., 364. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 224.

O. interrupta, Michx., Fl. Bor.-Am., ii., 273. Swartz, Syn. Fil., 160. Pursh, Fl. Am. Sept., ii., 657. Hook., Fl. Bor.-Am., ii., 265. Provancher, Fl. Can., 721.

A handsome fern found growing in tufts in low grounds, and common throughout Canada from Newfoundland and Nova Scotia to Lake Superior, probably finding its western limit in Manitoba. Not uncommon around Lake Nepigon and Thunder Bay, Ont. (*Macoun*.) Very abundant among boulders all around Lake Mistassini, N. E. Ter. (*J. M. Macoun*.) Collected by Bourgeau at Sturgeon Lake, some hundred miles north-west of Lake Superior, and, according to Milde, on Lake Winnipeg.

- (3032.) ***O. cinnamomea***, Linn., Sp. Pl., 1522. Swartz, Syn. Fil., 160. Michx., Fl. Bor.-Am., ii., 273. Pursh, Fl. Am. Sept., ii., 657. Hook., Fl. Bor.-Am., ii., 265. Hook. & Baker, Syn. Fil., 426. Provancher, Fl. Can., 721. Lawson, Can. Nat., i., 290. Macoun & Burgess, Trans. Roy. Soc. Can., ii., sect. iv., 225.

A common species in low ground throughout Nova Scotia, New Brunswick, Prince Edward Island, Quebec and Ontario, as far west as Georgian Bay, which is probably its limit, though Prof. Lawson records it as found at Two Heart River, Lake Superior, by Dr. R. Bell.

The form known as var. *frondosa*, Gr. is an occasional, accidental condition, in which the lower part of the frond is sterile, the apex fertile. Windsor, N.S. (*How.*) The Waterworks, Halifax Co., N.S. (*Jack.*) Molus River, Kent Co., N.B. (*Fowler.*) In swamps at Belleville, Hastings Co., and at Bismark, Elgin Co., Ont. (*Macoun.*)

CXXI. LYCOPODIACEÆ. CLUB-MOSS FAMILY.

760. LYCOPODIUM, Linn.

(3033.) **L. Selago**, Linn.; Hook. Fl. II., 266.

Not uncommon on mountains and northward. From Hudson Bay to the Rocky Mountains, and to the extreme Arctic Shores and islands. (*Richardson, Drummond.*) Labrador. (*Dr. Morrison.*) Cape Chudleigh, Digge's Island, and Nottingham Island, Hudson Strait. (*R. Bell.*) Summit of Mount Albert, altitude 4000 feet, and along the Gaspé Coast, Q. (*Macoun.*) Among grass on Carleton Heights, N.B. (*Fowler's Cat.*) On high exposed rocks, 10 miles south of Otter Head, and north of it, Lake Superior. On the Rocky Mountains at Kicking-Horse Lake, and on the Selkirks at Mount Macdonald; also on the Gold Range north of Griffin Lake, B.C. (*Macoun.*) Kootanie District, B.C. (*J. R. Anderson.*) Sitka, Ounalaska, and Kotzebue Sound. (*Rothr. Alask.*) Cumberland Islands, Arctic Sea. (*Walker.*) West-side of the Rocky Mountains near the sources of the Columbia. (*Douglas.*) Greenland. (*Ryder's Expedition.*)

Var. β . Hook. Fl. II., 266.

Tall and widely forking, leaves long pointed and often squarrose. Observatory Inlet, Millbank Sound to Stikine. (*Hook. Fl.*) Summit of Mount Benson, near Nanaimo, Vancouver Island; altitude 3000 feet. (*Macoun.*)

(3034.) **L. lucidulum**, Michx.; Hook. Fl. II., 266.

Common in swamps and wet woods throughout Canada. West coast of Newfoundland. (*J. Bell.*) Windsor, Halifax and Pictou, N.S.

(*Sommer's Cat.*) Common in Kent Co., N.B. (*Fowler's Cat.*) Brookville, N.B. (*Hay.*) North Mountain, Annapolis, N.S.; woods, Bescie River, Anticosti; abundant on Prince Edward Island at Brackley Point; coast of Gaspé and Mount Albert, Q. (*Macoun.*) Common in woods at Ottawa. (*Fletcher Fl. Ott.*) Low woods, London and Parry Sound, Ont. (*Burgess.*) Very common through northern Ontario and westward through the forest country to the Rocky Mountains at Laggan, and in the Gold Range north of Griffin Lake, B.C.; also on Mount Mark, near Qualicum, Vancouver Island. (*Macoun.*)

(3035.) **L. inundatum**, Linn.; Hook. Fl. II., 267.

In swamps and on wet sodden ground, generally eastward. Near Bedford; Northwest Arm and Point Pleasant, near Halifax; also at Pictou, N.S. (*Sommer's Cat.*) Bass River and several places in Kent Co.; not rare at Salmon River, N.B. (*Fowler's Cat.*) Black River, Lake Verd, and North Pond near East Point, Prince Edward Island; also in a peat bog, Hastings Road, North Hastings, Ont. (*Macoun.*) Wet sandy shore, Port Colborne, Lake Joseph, Muskoka, Ont. (*Burgess.*) North Shore of Lake Superior. (*Agassiz.*)

Var. **Bigelovii**, Tuckerm.; Gray Man., ed. V., 673.

Only found in the Maritime Provinces. Bogs, North Sydney, and Louisburg, Cape Breton. (*Macoun & Burgess.*) Grand Lake, Halifax Co., N.S. (*McKay.*) Bass River, Kent Co., N.B. Specimens received from Prof. J. Fowler. (*Macoun.*)

(3036.) **L. obscurum**, Linn.; Gray, Man., ed. VI., 696.

L. dendroideum, Michx.; Hook. Fl. II., 266.

Quite common in the pine forests of Ontario. Brigus, Newfoundland. (*R. Bell.*) West coast of Newfoundland. (*J. Bell.*) Windsor, Halifax, and Pictou, N.S. (*Sommer's Cat.*) Rather common at Bass River, N.B. (*Fowler's Cat.*) North Sydney and Baddeck, Cape Breton; Brackley Point, Prince Edward Island; and common along the Gaspé Coast, Q. (*Macoun.*) Salmon River, N.B. (*Wetmore.*) Woods, Lake Mistassini, N. E. Ter.; and Lake Winnipeg. (*J. M. Macoun.*) Woods, around Ottawa. (*Fletcher Fl. Ott.*) Sandy woods, Komoka, Ont. (*Burgess.*) Common in the central counties of Ontario, and westward around Lake Superior. (*Macoun.*) Canada to the Saskatchewan and Hudson Bay. (*Drummond.*) Northwest coast of America. (*Menzies.*) Sitka. (*Rothr. Alask.*)

(3037.) **L. annotinum**, Linn., Hook. Fl. II., 266.

Very common in all cool woods and on mountains across the continent. Brigus, Newfoundland. (*R. Bell.*) Windsor, Dartmouth, Halifax, and Pictou, N.S. (*Sommer's Cat.*) Common in dry woods, N.B. (*Fowler's Cat.*) Tobique River, N.B. (*Hay.*) Salmon River, N.B. (*Wetmore.*) Pirate's Cove, Canso, N.S.; Brackley Point and Cantire, Prince Edward Island, and woods at Salt Lake, Anticosti; also Gaspé Coast, Q. (*Macoun.*) Vicinity of Ottawa. (*Fletcher Fl. Ott.*) Low woods, Lake of the Woods, and Sault Ste. Marie, Ont. (*Burgess.*) Lake Mistassini, N. E. Ter., and Loon Strait, Lake Winnipeg. (*J. M. Macoun.*) Common in northern Ontario and westward to the Rocky Mountains, from Castle Mountain westward to the Selkirk Summit at Glacier; and westward to the Gold Range and the mountains, on Vancouver Island. (*Macoun.*) Crow Nest Pass, Rocky Mountains, and Iltasyouco River, B.C. (*Dawson.*) Cariboo Mountains, B.C.; altitude 6000 feet. (*Bowman.*) Killisnow Island, Alaska. (*Meehen.*) Sitka, Ounalaska, and Kotzebue Sound. (*Rothr. Alask.*) Canada to Slave Lake; Observatory Inlet to Millbank Sound. (*Hook. Fl.*)

Var. **alpestre**, Hartm.

Summit of Mount Albert, Gaspé, Q.; altitude 4000 feet. (*Macoun.*) Crevices of rocks, Nain, coast of Labrador. (*R. Bell.*)

Var. **pungens**, Spreng.

This form has longer and sharper leaves than the preceding. Summit of Mount Arrowsmith, Vancouver Island; altitude 5700 feet. (*Macoun.*)

(3038.) **L. sabinæfolium**, (Willd.) Hook. Fl. II., 266.

L. complanatum, L. var. *sabinæfolium*, Gray Man., ed. V., 674.

Nearly all our specimens are referred here as we have little of the *L. alpinum* that has the flattened stem of the European form. We believe Hooker correctly characterized this form when he said:—"foliis undique imbricatis nunc quadrifariis aequalibus erectis tereti-subulatis," and this surely cannot be said of *L. alpinum* which has flattened stems and unequal leaves. Newfoundland. (*Cormack.*) Stanhope Road, Prince Edward Island; Summit of Mount Albert, Gaspé, Q. (*Macoun.*) Table Top Mountain, Gaspé, Q. (*Porter.*) Lake Mistassini, N. E. Ter. (*J. M. Macoun.*) Crane Lake, Muskoka, Ont. (*Burgess.*) Magpie River, north of Lake Superior and westward;

Kicking Horse Lake, Rocky Mountains; Selkirk Mountains around the Summit Pass; on Portage La Loche, Lat 57°; on the summits of Mount Mark and Mount Arrowsmith, Vancouver Island. (*Macoun.*) Banks of the Saskatchewan. (*Hooker Fl.*) West coast of Newfoundland. (*J. Bell.*)

(3039.) **L. clavatum**, Linn.; Hook. Fl. II., 267.

Very common in damp woods throughout Canada. West coast of Newfoundland. (*J. Bell.*) Brigus, Newfoundland (*R. Bell.*) Windsor, Halifax, Truro and Pictou, N.S. (*Sommer's Cat.*) In dry woods, common in New Brunswick. (*Fowler's Cat.*) Common on Anticosti and Prince Edward Island, and along the Gaspé Coast, Q. (*Macoun.*) Vicinity of Ottawa. (*Fletcher Fl. Ott.*) Truro, N.S.; and Sault Ste. Marie, Ont. (*Burgess.*) Missinaibi River, Ont. (*R. Bell.*) Lake Mistassini, N. E. Ter. (*J. M. Macoun.*) Common in eastern and north-western Ontario. (*Macoun.*) Throughout Canada to the Saskatchewan. (*Hook. Fl.*)

Var. β . **monostachyon**, Hook. Fl. II., 267.

Little Tobique Lakes, N.B., 1884. (*Hay.*) Along Brackley Point Road, Prince Edward Island, 1888. (*Macoun.*) Blood-vein River, Lake Winnipeg. (*J. M. Macoun.*) Rocky Mountains, north of Smoking River. (*Hook. Fl.*)

Var. δ . Hook. Fl. II., 267.

Northwest America, from Observatory Inlet to Stikine. (*Hook. Fl.*) Roadside, between Hastings and New Westminster, B.C., spikes four instead of two; Mount Benson, near Nanaimo, Vancouver Island. (*Macoun.*)

(3040.) **L. complanatum**, Linn.; Hook. Fl. II., 267.

West coast of Newfoundland. (*J. Bell.*) Halifax, Truro and Pictou, N.S. (*Sommer's Cat.*) In dry woods; common in Kent Co., and at Campbellton, N.B. (*Fowler's Cat.*) Tobique River, N.B. (*Hay.*) Salmon River, N.B. (*Wetmore.*) In woods at Kingston, N.S.; at Cantire, Prince Edward Island, and along the Gaspé Coast, Q. (*Macoun.*) Vicinity of Ottawa. (*Fletcher Fl. Ott.*) Missinaibi River, Ont. (*R. Bell.*) Lake Mistassini, N. E. Ter. (*J. M. Macoun.*) Crane Lake, Muskoka, Ont. (*Burgess.*) Very common in cool woods throughout northern Ontario and westward to Lake Nepigon, and

Kakabeka Falls, Ont., and Swan Lake, Man.; mossy woods at Castle Mountain, Rocky Mountains, and westward to the Selkirk and Gold ranges, B.C. (*Macoun.*) Wigwam River, and Dean or Salmon River, B.C. (*Dawson.*) From Lake Huron to the Saskatchewan. (*Hook. Fl.*) Northwest coast. (*Menzies.*) Pine Grove near Blue Church Cemetery, Prescott; and woodlands west of Brockville, Ont.; not common. (*Billings.*)

(3041.) **L. alpinum**, Linn.

Elevated parts of the Rocky Mountains, Lat. 52°-56°. (*Drummond.*) North of Griffin Lake on the summit of the Gold Range, B.C.; altitude 6500 feet. (*Macoun.*) We are doubtful of even these specimens, and they may possibly belong to *L. sabinaefolium*, although the flattened stems and leaves of two sizes are like *L. alpinum* of Europe.

CXXII. SELAGINELLACEÆ.

761. **SELACINELLA** (BEAUV.)

(3042.) **S. spinosa**, Beauv.; Gray, Man., ed. VI., 698.

S. selaginoides, Link.; Gray, Man., ed. V., 675.

Lycopodium selaginoides, Linn.; Hook. Fl. II., 267. Pursh Fl. II., 654.

In wet grassy places along rivers and on mountains. Gunn River, Anticosti; along the Madeline and Ste. Anne des Monts rivers, Gaspé, Q. (*Macoun.*) Mossy shore of Boundary Lake, Q. (*Pringle.*) Low shore at Saugeen, Ont. (*Burgess.*) Shore of the Bruce Peninsula at the Fishing Lakes; very common along the north shore of Lake Superior and shores of Lake Nepigon, Ont.; rather common on wet banks along all mountain streams from the Bow River at Morley to Bear Creek in the Selkirk Mountains. (*Macoun.*) Canada. (*Michaux.*) Along the Saskatchewan. (*Drummond.*) Ounalashka. (*Rothr. Alaska.*)

(3043.) **S. rupestris**, Spring.

Lycopodium rupestre, Linn.; Hook. Fl., II., 267.

Quite common on barren hills, in sand, on rocks, and high up on mountains, especially westward. Keswick Ridge, N.B. (*Fowler's Cat.*) Vicinity of Ottawa. (*Fletcher Fl. Ott.*) Common at Chalk River on the Ottawa, also at Belleville, Hastings Co., and on Rice Lake Plains,

and barren hills in Murray Tp., Northumberland Co., Ont; east coast of Lake Nepigon and on sand hills throughout the prairie region; abundant on dry arid soil at Morley and on the summits of the higher Rocky and Selkirk mountains; Gold Range, B.C. At home in the valley as well as on the mountain top. (*Macoun.*) On rocks, Lake of the Woods and Parry Sound, Ont. (*Burgess.*) Eastern Summit of Kootanie Pass, Rocky Mountains. (*Dawson.*) North shore of Lake Superior. (*Agassiz.*) Rocks in Pine Grove, two miles from Prescott, near the river, and rocks west of Brockville, Ont.; not uncommon. (*Billings.*)

Var. β ., Hook.

Lycopodium rupestre, var. β ., Hook. Fl. II., 267.

Northwest America. (*Douglas.*) Observatory Inlet. (*Dr. Scouler.*) Abundant on rocks throughout Vancouver Island, and on the mainland of British Columbia west of the Coast Range. Branches much longer than in the eastern form and the leaves looser. (*Macoun.*)

(3044.) **S. apus**, Spring.

Low marshy places along the base of "The Hill" at Belleville, and between it and the Grand Junction Railway; very abundant in wet sandy soil, Presqu'île Point, Lake Ontario; low marshy ground, Owen Sound, and Red Bay, Lake Huron. (*Macoun.*) Vicinity of Ottawa. (*Fletcher Fl. Ott.*) Springy, grassy places, London, and Komoka, Ont. (*Burgess.*)

762. ISOETES, Linn. (QUILLWORT.)

(3045.) **I. lacustris**, Linn.; Hook. Fl. II., 268.

Saskatchewan. (*Drummond.*) St. Francis Lakes, Q. (*Pringle.*) River St. Marie at the head of the Canal. 1869. (*Macoun.*)

(3046.) **I. echinospora**, Durieu. Var. **Braunii**, Engelm.

In water along the borders of lakes chiefly in the Laurentian districts. Rather common in Charlotte Co., N.B. (*Vroom.*) Shelburne, N.S. (*J. P. James.*) In Partridge Lake, Anglesea, Addington Co., Ont. (*Macoun.*) Vicinity of Quebec. (*Pringle.*)

Var. —?

Abundant in Sproat Lake and Somas River at Alberni, west side of Vancouver Island, Aug., 1887. (*Macoun.*)

(3047.) **I. Tuckermanni**, A. Braun.

In water at the outlet of Potter's Lake, North Sydney, Cape Breton. (*Macoun & Burgess.*)

(3048.) **I. Bolanderi**, Engelm.

Abundant in a marshy pond on the Indian Reservation at Kamloops, B.C. It was partly in and partly out of water. This is considered slightly different from true *I. Bolanderi* by Prof. Underwood. Quite common in Shushwap Lake at Sicamous, B.C. (*Macoun.*)

(3049.) **I. riparia**, Engelm. Var. **Canadensis**, Engelm.

In Crow River, immediately above the dam at Marmora Iron Works, Hastings Co.; also in Gull River at the head of Mud-turtle Lake, Victoria Co., Ont. (*Macoun.*)

(3050.) **I. Nuttallii**, A. Braun. in herb.

Very common on rocky springy ground near the Half-way House between Nanaimo and Wellington Mine, Vancouver Island, June 1887. (*Macoun.*)

(3051.) **I. maritima**, Underwood, Bot. Gaz. XIII. 94. N. Sp.

"Amphibious or mostly terrestrial; root-stock small, only slightly bilobed; leaves 8-15, rigid, green, 2-5 cm. long, 1-5 mm. wide, with abundant stomata; sporangia oval 4 mm. long, 2-5 mm. wide, brownish white, covered one-third to one-half by the velum; ligule small inconspicuous; macrospores 0.42-0.48 mm. thick, densely spinulose, the spines somewhat blunt, but rarely confluent; microspores white, smooth, 0.032-0.035 mm. thick."

Salt marshes, Alberni Canal below Alberni, Vancouver Island, Aug. 1887. (*Macoun.*)

CXXIV. MARSILIACEÆ.

763. MARSILIA, Linn.

(3052.) **M. vestita**, Hook. & Grev.

Abundant on desiccated ground at the north end of the Cypress Hills, Alberta; also on sandy soil, covered occasionally with water, on the Indian Reservation at Kamloops, B.C. (*Macoun.*)

(3053.) **M. mucronata**, A. Braun. MSS. Am. Journ. Sci. 2nd. Ser. Vol. III., 55.

In pools on the open prairie east of the Hand Hills, Alberta, Aug. 8th, 1879. (*Macoun.*)

CXXV. SALVINIACEÆ.

764. AZOLLA, Lam.

(3054.) **A. Caroliniana**, Willd.; Hook. Fl. II., 268.

Floating on the still waters of Lake Ontario. (*Pursh.*) In water near Burlington Beach, Hamilton, Ont. (*Logie, Buchan.*) Very abundant in still water at Salmon Arm, Shuswap Lake; and in pools along the C. P. Ry. between the bridge at Sicamous and the first crossing of Eagle River, B.C. (*Macoun.*)

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Additions and Corrections to Parts I-IV.

PART I.

2. ANEMONE.

(3055.) **A. Oregana**, Gray, *Proced. Amer. Acad.*, XIV., 308.

A. nemorosa, Linn. var. (?) Macoun, *Cat. III.*, 478.

When compiling Part III., I separated the western form of *A. nemorosa* from the eastern one, being satisfied that it was a distinct variety. Since then Dr. Gray has erected it into a new species under the above name. All references in Part III. belong here. Not uncommon in low damp woods in the southern part of Vancouver Island, 1887. (*Macoun.*)

765. ANEMONELLA, Spach.

(19.) **A. thalictroides**, Spach.; Gray *Man. ed. VI.*, 39. (1890.)

All references under *Thalictrum anemonoides*, Part I., 14 & III., 478, belong here.

3. THALICTRUM.

(8056.) **T. minus**, Linn. Var. **Kemense**, Trelease, *Proced. Bos. Soc. Nat. Hist.*, XXIII., 300.

Alaska. (*Trelease.*)

(22.) **T. polygamum**, Muhl.; Gray, *Man. ed. VI.*, 39. (1890.)

T. Cornuti, Macoun, *Cat.*, I., 15.

There is still much confusion regarding the distribution of this species and *T. purpurascens*. Collectors would confer a favor by gathering fruit as well as flowers. "This species is never glandular, so that all specimens with glandular pubescence are apparently referable to *T. purpurascens*."

(3057.) **T. venulosum**, Trelease, *Proced. Bos. Soc. Nat. Hist.*, XXIII, 302.

"Glabrous and glaucous, the stem, petioles and sepals purple-tinted, the foliage typically pale or whitened. Stem simple, erect, 7-20 inches high. Stem leaves 2-3, long petioles, 3-4 ternate. Leaflets approximated, short stalked, moderately firm, rounded and lobed at the apex as in *T. dioicum*, the lower surface rugose-veiny. Panicle simple, narrow, its short erect branches few-flowered. Flowers dioecious, small. Sepals ovate. Stamens 10-20, on slender filaments; anthers oblong, slender-pointed. Achenia about eight, nearly sessile, 4 mm. long, ovoid tapering into a straight beak; thick-walled and otherwise similar to those of *T. dioicum* except that they are two-edged and commonly with one less groove on each side. Stigma sagittate. Seed ovid, pointed at one end, 1×2 mm., filling the ovary." *British America. (Franklin Expedition.) Saskatchewan region. (Bourgeau.) On the Nechacco River, Northern British Columbia, 1875. (Macoun.)*

4. MYOSURUS.

(25.) **M. minimus**, Linn. Var. **lepturus**, Gray.

M. minimus, Macoun, *Cat.*, I, 15 & III, 479 in part.

All references to Vancouver Island specimens are placed here. This species is quite common in the neighbourhood of Victoria, Vancouver Island, in damp spots in pasture fields. Dr. Gray places this variety under *M. apetalus*, Gay, but I prefer Prof. Greene's opinion in *Bull. Torr. Bot. Club*, xiii, 61, that it should be placed under *M. minimus*.

(26.) **M. apetalus**, Gay.; Gray, *Torr. Bull. Bot. Club*, XIII, 2.

References under *M. aristatus*, Part I., 15 & III., 479, belong here.

5. RANUNCULUS.

(3058.) **R. circinatus**, Sibth.; Gray, *Man.*, ed. VI., 40 (1890.)

References under *R. aquatilis*, Linn., var. *stagnatilis*, Part I., 16, belong here. In ponds at Agassiz, and on the Reservation at Kamloops, B.C., 1889. (*Macoun.*)

- (28.) **R. aquatilis**, Linn.; Gray, Proc. Amer. Acad, XIII., 363.

All references under *R. hederaceus*, Part I., 15, and under *R. aquatilis*, var. *heterophyllus*, Part III., 479, belong here. Quite common in many parts of Vancouver Island, especially at Cedar Hill, Goldstream, Nanaimo, and Salt Spring Island, Gulf of Georgia; also at Agassiz and by a pond on the mountain south of Spence's Bridge, B.C., 1889. (*Macoun.*) True *R. hederaceus* has been collected by the Rev. A. Waghorne on Newfoundland.

- (29.) **R. multifidus**, Pursh, var. **terrestris**, Gray, Man., ed. VI., 41 (1890.)

References under *R. multifidus*, Pursh, var. β . Part I., 16, belong here. On mud, Bonaparte River, B.C. (*J. M. Macoun.*) Shore of Griffin Lake, B.C. (*Macoun.*)

- (3059.) **R. reptans**, Linn.; Torr. & Gray, Fl. I., 16.

R. Flammula, Linn., var. *reptans*, Meyer; Macoun, Cat., I., 17.

We agree with Dr. Britton in going back to the old name for this species and hence would place all our specimens of *R. Flammula* var. *reptans* under this name.

- (31.) **R. Flammula**, Linn., var. **intermedius**, Hook. Fl. I., 11.

Gravelly or muddy margins of streams. Donald, Columbia Valley, 1885; Griffin Lake, Gold Range; Kamloops, Agassiz, Port Haney, Hastings, and Lulu Island, B.C., 1889; also frequent on Vancouver Island. 1887. (*Macoun.*)

- (3060.) **R. natans**, C. E. Meyer.

To this species must be referred all the specimens included in *R. multifidus*, var. γ . *repens*, Part I., 16, & III., 480. Albion Road, Prince Edward Island, 1888; Bonaparte River, and Griffin Lake, Gold Range, B.C., 1889. (*Macoun.*)

- (3061.) **R. Eschscholtzii**, Schlecht. Hook. Fl. I., 18.

All references under *R. nivalis* var. *Eschscholtzii*, Watson, Part I., 20, & III., 480, belong here. Common on Mount Queest, and other summits of the Gold Range, B.C., at an altitude of 5000 to 7000 feet, 1889. (*Macoun.*)

(3062.) **R. acrifolius**, Gray, *Proced. Amer. Acad.*, XIII, 374.

R. acris, Hook. Fl. I., 18, in part.

"A foot high, strict, with pubescence in good part appressed; leaves all palmately or pedately and deeply 3-5 parted or even divided, and often again 2-3 cleft into narrow lanceolate or linear segments or lobes; petals orbicular-obovate, one-fourth inch long, hardly double the length of the spreading calyx; akenes over a line long; beak of half their length." Northern Rocky Mountains, Lat. 58°. (*Drummond* vide *Gray*.)

- *H. Macounii* (3063.) **R. hispidus**, Michx.; partly DC.

R. repens, Linn., var. *hispidus*, Torr. & Gray; Macoun, Cat. I., 21.

All the specimens of our native forms referred to *R. repens* var. *hispidus*, belong here, or to the next. Dr. Gray in his last revision placed the species after *R. Pennsylvanicus*, which is evidently its proper place. At present it is rather difficult to separate specimens of this form from *R. septentrionalis*, Poir., and it is very desirable that all Canadian collectors get good fruiting specimens of what we formerly included in *R. repens* and its variety. Our specimens of *R. hispidus* are as below. Mouth of Nepigon River, Lake Superior; Pheasant Plain, Man.; Red Deer River, near Hand Hills, Alberta; along the Columbia River at Donald; at Kamloops, Agassiz, and Port Haney, B.C. (*Macoun*.) Wigwam River, B.C. (*Dawson*.)

(3064.) **R. septentrionalis**, Poir.; Gray, Man., ed. VI., 43. (1890.)

Nearly all the synonymy placed under *R. repens* var. *hispidus* by me in Part I., page 20 of this Catalogue is transferred to this species by Dr. Gray, so that nearly all the localities for the former species may possibly belong to this, which ranges from New Brunswick to Manitoba. Our specimens of it are as below. In low ground along streams, in alluvium. Campbellton, N.B. (*Chalmers*.) Chipman, N.B. (*Wetmore*.) Whycocogmah, Cape Breton; Black River, Prince Edward Island; Beesie River, Anticosti; Madeline River, Gaspé, Q.; Cold Creek Valley, near Wooler, Ont. (*Macoun*.) Vicinity of London, Ont., and var. *nitidus*, Part I., 22, from London. (*Burgess*.)

(3065.) **R. HEBBOCARPUS**, Hook. & Arn.

Introduced in ballast on the wharves at Nanaimo, Vancouver Island. (*Macoun*.)

(51.) **R. occidentalis**, Nutt.; Gray, *Proced. Amer. Acad.*, XIII., 372; Macoun, *Cat.*, I., 22.

R. Nelsoni, Gray; Macoun, *Cat.*, I., 22.

Dr. Gray in his late revision takes *R. occidentalis* as the type of a multiform species and places the following varieties under it.

Var. **robustus**, Gray, l. c., 373.

R. occidentalis, Gray, *Proced. Amer. Acad.*, VIII., 374.

A span to a foot or more in height, stout-stemmed and ample-leaved, large flowered. Chiefly Alaskan. (*Gray.*) Our specimens are from Queen Charlotte Islands, 1878 (*Dawson*), and Victoria, Vancouver Island, 1887. (*Macoun.*)

Var. **Lyalli**, Gray, l. c.

This variety has rather large thin leaves, short peduncles and petals not longer than the calyx. Valley of Flathead River, Rocky Mountains; mountains, south of Tulameen River, B.C. 1888. (*Dawson.*) Mountains, north-west of Spence's Bridge, B.C. 1889. (*J. M. Macoun.*)

Var. **tenellus**, Gray, l. c.

R. Nelsoni var. *tenellus*, Gray; Macoun, *Cat.*, I., 22.

Slender, sometimes tall and with long internodes, often glabrate; leaves simpler and smaller. Common on Vancouver Island and west of the Coast Range, B.C. (*Macoun.*)

(2099.) **R. parvulus**, Linn.; Gray, *Proced. Amer. Acad.*, XIII., 378.

R. muricatus, Macoun, *Cat.*, III., 481.

"Akenes smooth and even or at length sprinkled with some scattered papillæ, especially towards the margin." In *R. muricatus* the akenes are strong-beaked, tuberculate or echinate. Only station known St. John's, N.B. (*Hay.*)

10. DELPHINIUM.

(66.) **D. scopulorum**, Gray, var. **glaucum**, Gray, *Bot. Gaz.*, XII., 52.

D. scopulorum, Gray; Macoun, *Cat.*, I., 25, in part.

All our Rocky Mountain specimens are of this variety. Mountains north of Finlayson Lake, N.W.T., Lat. 61°, 1887. (*Dawson.*)

29. NYMPHÆA.

(3066.) **N. tetragona**, Georgi, Reise im. Russ. Reichs, I., 220. (1775.)

Custalia tetragona, Lawson, Trans. Roy. Soc. Can., VI., sec. iv., 112.

C. pygmæa, Salisb. Parad. Lond. t., 68.

Nymphæa pygmæa, Ait. Hort. Kew., ed. 2., III., 293.

Dr. Britton of Columbia College, New York, after a careful examination of all available specimens has satisfied himself that this species is quite distinct from *N. odorata* var. *minor*, Sims. He says:—"The plant may at once be distinguished from the eastern *N. odorata* var. *minor*, by the oblong leaves, sometimes nearly twice as long as broad, with narrow, acutish lobes, and the flowers still smaller with 7 to 8 rayed stigma." Misinaibi River, Northern Ontario, 1879. (*R. Bell*.) In ponds along the Severn River, Keewatin, 1886. (*J. M. Macoun*.)

(93.) **N. reniformis**, DC.; Gray, Man., Ed. VI., 56. (1890.)

References under *N. tuberosa*, Paine; Gray, Man., ed. V., 56 (1867); Macoun, Cat., I., 31, belong here.

30. NUPHAR, Smith.

(97.) **Nuphar advena**, Ait. f. var. **minus**, Morong.

References under *N. luteum*, Smith, var. ——— (?) Part I., 23, belong here.

766. STYLOPHORUM, Nutt.

(3067.) **S. diphyllum**, Nutt. (Celandine Poppy.)

Damp woods, from Plover Mills to Thorndale, Middlesex Co., Ont., 15th May, 1887. (*R. Elliott*.) Near London, Ont. (*Dearness*.)

40. NASTURTIUM.

(115.) **N. palustre**, DC. Var.

Our specimens placed here agree exactly with Suksdorff's plant collected May 4th, 1885, and distributed with the above name. The long pods, over half an inch long, with stiff branching stem and deep fusiform root distinguish it from all other forms of *N. palustre* in our possession. Our specimens are from Port Hancy, and Agassiz in the lower

valley of the Fraser River, B.C. The same form was collected on Vancouver Island, near Cedar Hill, in 1887. Other specimens approaching these were collected in muddy places at Kamloops, B.C., 1889. (*Macoun*.)

(3068.) **N. obtusum**, Nutt.; Torr. & Gray, Fl. I., 74.

This plant has been received from the United States as *N. lyratum*, Palmer, Col. 1876, No. 12, and as *N. obtusum*, Palmer, Col. 1877, No. 33. The plant in question is only about four inches high and branches from the root. Growing in ground subject to overflow, Thompson River, Kamloops, B.C., 1889; also at Nanaimo, Vancouver Island, 1887. (*Macoun*.)

42. CARDAMINE.

(3069.) **C. Lyallii**, Wat., Proc. Am. Acad., XIV., 466.

C. cordifolia, Wat., Bot. King. Exp., 19, in part; Gray, Proc. Amer. Acad., VIII., 376; Torr. Bot. Wilkes, 299.

"Glabrous; stem erect from a running root-stock, simple or branched, a foot or two high; leaves few (4 to 8), petiolate, undivided, reniform to cordate, the margin sinuate, 1 to 3 inches broad; raceme pedunculate; flowers white; pods one inch long or less, on spreading pedicels, rather shortly alternate to a very short style, radicle cleft to the middle." On the southern borders of British Columbia. (*Lyall*.)

(125) **C. Douglasii**, (Torr.) Britton, Trans. New York, Acad. Sci., IX., 7. (1889.)

C. rotundifolia, var. *purpurea*, Macoun, Cat., I., 40.

I entirely agree with Dr. Britton in raising this plant to the rank of a species. It now takes the place of *C. rotundifolia* and its variety in Part I., 40 of this catalogue, references under *C. rotundifolia* going under *C. rhomboidea*, while those under *C. rotundifolia* var. *purpurea*, go here.

(129.) **C. pratensis**, Linn., var. **occidentalis**, Watson.

In springs in deep shade above the railway bridge at Nanaimo, Vancouver Island, June 3rd, 1887. (*Macoun*.)

Var. **angustifolia**, Hook.

Finlayson River, Lat. 61°, N.W.T., July 18th, 1887. (*Dawson*.)
Cape Chudleigh, Ashe's Bay, Upper Savage Islands and Digge's Island,

Hudson Strait. (*R. Bell.*) The specimens collected by Dr. Bell were referred to *C. pratensis* in Part III., page 480. Since then, specimens received from Greenland, have shown that these are the variety with bright purple flowers.

(130.) ***C. hirsuta***, Linn., var. ***montana***.

This is a very distinct form and seems to be closely related to *C. sylvatica*, but differs from that species in growing on mountains and in wet places. It approaches *C. oligosperma* in having its leaflets almost petioled. The specimens hitherto referred to *C. hirsuta* var. *sylvatica*, and collected in the Rocky and Selkirk mountains, belong here. Common on the wet slopes of Mount Queest and other high mountains in the Gold Range, near Griffin Lake, B.C., altitude 6000–7000 feet. (*Macoun.*) Another form near the coast at Burrard Inlet has also been referred to *C. hirsuta*, var. *sylvatica*, but it cannot be that species as it differs in many minor points besides growing in wet ditches.

(3070.) ***C. flexuosa***, With.; Britton, Trans. N.Y. Acad., IX., 8. (1889.)

C. hirsuta, Linn., var. *sylvatica*, Gray, *Man.*, ed. V., 67 (1867); *Macoun*, *Cat.*, I., 41.

Dr. Britton says of this species:—"So far as I have observed, its habitat is on rocky banks in more or less shaded woodlands; that of *C. hirsuta* being either actually in the water or in very moist situations. It appears to be a smaller plant than *C. hirsuta*, with a decidedly flexuous stem, the leaves smaller and with narrower divisions." Our knowledge of this species agrees exactly with that of Dr. Britton, and we have no hesitation in changing the names as above. Our specimens are from "dry rocks," close to Shannonville Station on the G.T.R., Hastings Co., Ont., 1864; and Island Portage, Dawson Route west of Lake Superior, 1872. (*Macoun.*)

767. PLATYSPERMUM, Hook.

(3071.) ***P. scapigerum***, Hook.

On open slopes, Mount Finlayson, Goldstream, Vancouver Island, May 18th, 1887. (*Macoun.*)

43. ARABIS.

- (3072.)
- A. humifusa**
- , (J. Vahl.) Watson.

A. petraea, Lam.; Macoun, Cat., I., 42, in part.

Greenland and Arctic Islands. The Lake Superior reference in Part I., goes to *A. lyrata*, and the Rocky Mountains ones to *Sisymbrium humile*.

- Var.
- pubescens**
- , Watson.

Gravelly shores of Hudson and James bays. West coast of Hudson Bay, near mouth of Severn River, Lat. 56°, August 10th, 1886; South Twin Island, James Bay, July 17th, 1887. (*J. M. Macoun*.) York Factory, Hudson Bay. (*R. Bell*.)

- (132.)
- A. lyrata**
- , Linn., var.
- occidentalis**
- , Watson.

A. petraea, Lam. var. *ambigua*, Regel.

Dr. Watson has made the above change, and this form is now evidently in its proper place. Apparently quite common in the northern part of British Columbia. A specimen received from the British Museum and labelled *A. lyrata* (no locality) is this variety.

- (3073.)
- A. Lemmoni**
- , Wat., Proc. Am. Acad., XIV., 467.

A. canescens and var. *latifolia*, Wat., Bot. King. Exp., 16, and Bot. Calif., I., 32, II., 431; Macoun, Cat., III., 487.

"Perennial, low (a span high or less), glaucous, hoary below with fine densely stellate pubescence, the stems several from a branching caudex, slender, glabrous above; lower leaves spatulate-oblongate, rarely with one or two teeth, 6 to 9 lines long, the petiole sometimes ciliate, the cauline oblong-lanceolate, auriculate, mostly glabrous or nearly so; flowers small, rose-colored, the sepals pubescent; pods ascending or widely spreading on short pedicels (1 to 3 lines), glabrous, curved, 1 to 2 inches long by $\frac{2}{3}$ of a line wide, more or less attenuate to a sessile stigma or short style; seeds in one row, orbicular, narrowly winged." Mountains in the Bow River Pass, Sept. 13, 1879; on the summit of Canmore Mountain, Rocky Mountains, June 27, 1885. (*Macoun*.)

- (3074.)
- A. confinis**
- , Wat., Proc. Amer. Acad., XIV., 466.

A. laevigata, Hook. Fl. Bor.-Am., I., 43.*Turritis glabra* and var. β , Torr. & Gray, Fl. I., 78, and 666.*T. brachycarpa*, Torr. & Gray, Fl. I., 79.*T. stricta*, Torr. Fl. N.Y., I., 53, not Grah.; Gray, Gen. Ill., I., 144, t. 59.*A. Drummondii*, Gray, Man., ed. V., 69 (1867); Macoun, Cat. I., 43, in part.

"Biennial, rarely somewhat glaucous; stems erect, one or several, usually simple, 1 to 3 feet high; lower leaves oblanceolate, usually dentate, finely stellate-pubescent or sometimes glabrous, the cauline oblong to linear-lanceolate, auriculate; flowers white or pinkish; pods more or less spreading or sub-erect, a line broad or less, straight or slightly curved, usually more or less attenuate above and beaked; seeds small, narrowly oblong, winged." This includes all *A. Drummondii* and var. *brachycarpa* from the Atlantic to the Rocky Mountains.

(138.) **A. Drummondii**, Gray.

Only the Rocky Mountains and westward are included in the range of this species. Fine specimens were collected at Kamloops, Spence's Bridge and Lytton, B.C., in the summer of 1889. (*Macoun*.)

(3075.) **A. Columbiana**.

Resembling *A. arcuata* in the shape of the pods, but differing very much in general appearance. The pods are longer and are exactly sickle-shaped, and the pedicel is shorter; flowers white, calyx almost smooth, but occasionally with a few branching hairs which are more numerous on the leaves and stem, especially towards the base; leaves at the foot of the stem slightly toothed and tapering into a petiole, those of the stem sessile and often clasping. It may be designated a winter annual as its seeds are ripe early in May. Quite common on the lower slopes of the mountains bordering the Thompson and Fraser rivers from Spence's Bridge to Yale, B.C. First detected May 19, 1875. (*Macoun*.)

(2101.) **A. canescens**, Nutt.

On mountain slopes in the dry region of British Columbia, Cherry Bluff, near Kamloops, and throughout the Nicola Valley. (*Dawson*.) Along the mountain slopes at Yale, Lytton, Spence's Bridge, and Kamloops, B.C. (*Macoun*.)

46. SISYMBRIUM.

(157.) **S. humile**, C. A. Meyer; Gray, Man., ed. VI., 71. (1890.)

Arabis petraea, Macoun, Cat., I., 42, & III., 486.

Since Parts I. & III. of my catalogue were published, Dr. Watson has carefully looked into the various specimens of *A. petraea* sent from Canada, and has referred most of them as above. It follows therefore that almost all references to *A. petraea* in Parts I. & III. must be considered cancelled. See *A. humifusa*.

(3076.) *S. SINAPISTRUM*, Crantz.

S. Pannonicum, Jurg.

This species has been introduced in a number of places along the line of the Canadian Pacific Railway. Castle Mountain, Rocky Mountains, 1885. (*Macoun*.) Near Nepigon Bridge, Lake Superior, 1886. (*Fletcher*.) At Port Arthur, Thunder Bay, Lake Superior, 1889. (*Dr. Britton*.) On an embankment along the C. P. Ry., about 300 yards west of Burketon station, 45 miles east of Toronto, 1889. (*W. Scott*.)

51. DRABA.

(173.) *D. Fladnizensis*, Wulf.; Watson, *Proced. Amer. Acad.*, XV., 258.

References under *D. androsacea*, Part I., 51, belong here.

(176.) *D. incana*, Linn. var. *arabisans*, Watson; Gray, *Man.*, ed. VI., 67. (1890.)

D. arabisans, Michx.; Macoun, *Cat.*, I., 52; Gray, *Man.*, ed. V., 71. (1867.)

Draba incana is described in Gray's new manual as having *oblong to lanceolate pods* which are generally *acute* and *straight* and often *pubescent*, while those of var. *arabisans* are *glabrous*, *acuminate* or *acute* and *twisted*.

54. LESQUERELLA, Watson, *Proced. Amer. Acad.*, XV., 249.

(187.) *L. Ludoviciana*, Watson, *Proced. Amer. Acad.*, XV., 252.

Vesicaria Ludoviciana, DC.; Macoun, *Cat.*, I., 54, in part.

All the prairie references in Part I., belong here. The specimens from British Columbia to the next.

Var. *arenosa*, Watson, *Proced. Amer. Acad.*, XV., 252.

Vesicaria arenosa, Richards. in *Frank. Journ.*, 26.

Watson places this in the Saskatchewan region, but if *V. arenosa* is a correct reference, then its habitat is "on a hill 700 feet high at Bear Lake River," Lat. 65°. This is the station mentioned by Richardson in *Hooker's Flora, Bor. Am.*, I., 48.

(3077.) **L. Douglasii**, Watson, *Proced. Amer. Acad.*, XV., 255.

Vesicaria Ludoviciana, Macoun, *Cat.*, I., 54, in part.

"Resembling *L. Ludoviciana*, but the pods smaller, obovate and very obtuse, erect upon spreading pedicels, and the cells only 2-ovuled; lower leaves sometimes ovate upon a narrow petiole." On the Columbia River east of the Cascade Mountains. (*Lyall.*) Similkameen Valley, B.C., June 23rd, 1877. (*Dawson.*)

(188.) **L. arctica**, Watson, *Proced. Amer. Acad.*, XV., 254.

Vesicaria arctica, Richards; Macoun, *Cat.*, I., 54, in part.

All the northern references belong here.

Var. **Purshii**, Watson, *Proced. Amer. Acad.*, XV., 254.

Vesicaria arctica, Macoun, *Cat.*, I., 54, in part, & III., 490.

Pod somewhat pubescent; septum complete. Island of Anticosti, Q. (*Sheppard* in Torr. & Gray.) Very common in the valley of Jupiter River, Anticosti, near the sea. (*Macoun.*)

59. SUBULARIA.

(196.) **S. aquatica**, Linn.; Macoun, *Cat.*, I., 55.

Quite common in Muskoka Lake, Ont. (*Dr. Britton.*) In abundance along the shallow margin of Sproat Lake, near Alberni on the west side of Vancouver Island. (*Macoun.*)

61. THLASPI.

(3078.) **T. PERFOLIATUM**, Linn.; Hooker, *Student's Flora*, 41. (1884.)

Growing on a cold, wet, springy bank, Dundas Ravine, near Hamilton, Ont. "Must be introduced, but I cannot yet make out how it got where I found it." (*Burgess.*)

70. POLANISIA, Raf.

(3079.) **P. trachysperma**, Torr. & Gray, *Man.*, ed. VI., 75. (1890.)

P. graveolens, Raf.; Macoun, *Cat.*, I., 59, & III., 491.

All the stations recorded under *P. graveolens* from the North-west Territories, in Parts I. & III., pages 59 & 491, belong to this species. The

two forms can be easily separated by their stamens. In this species they are long exserted, while in *P. graveolens* they scarcely exceed the petals.

CXVII. RESEDACEÆ. MIGNONETTE FAMILY.

716. RESEDA, Tourn. (DYER'S ROCKET.)

(3080.) *R. ALBA*, Linn.; Hooker, Student's Flora, 45. (1884.)

Growing in abundance at the wharf and by the roadside at Sicamous, C. P. Ry., B.C., 1889. (*Macoun*.)

74. SOLEA, Spreng., in part.

(225.) *S. concolor*, Ging.; Gray, Man., ed. VI., 31. (1890.)

References under *Ionidium concolor*, Benth. & Hook., Part I., 61, belong here.

75. VIOLA.

(228.) *V. primulæfolia*, Linn, var. *occidentalis*, Gray, Bot. Gaz. XI., 255.

V. Nuttallii, var. *linguefolia*, Macoun, Cat., III., 493.

A form with ovate or spatulate-oblong leaves all tapering at base. Rocky places by a brook on a shady hill side, western summit of the North Kootanie Pass, Rocky Mountains, 1883. (*Dawson*.)

(229.) *V. blanda*, Willd., var. *palustriformis*, Gray, Man., ed. VI., 79. (1890.)

V. blanda, Macoun, Cat., I., 62, in part.

Specimens having the upper surface of the leaves, sparsely and finely punctate, referred here. North Bay, Lake Nipissing, Ont., 1889. (*Dr. Macoun*.) Sandy river margin, Lake Nepigon. (*Macoun*.)

Var. *renifolia*, Gray, Man., ed. VI., 80. (1890.)

References under *V. renifolia*, Gray, Part I., 62, belong here.

(235.) *V. palmata*, Linn.; Gray, Man., ed. VI., 79.

Specimens referred to *V. cucullata*, Ait., var. *palmata*, Gray, Part I., 63, belong here.

Var. **cucullata**, Gray, Man., ed. VI., 79. (1890.)

Specimens referred to *V. cucullata*, Ait., and *V. cucullata* var. *cordata*, Gray, Part I., 62, 63, belong here.

(238.) **V. Langsdorffii**, Fisch.; Macoun, Cat., I., 63.

In wet places and swamps, at Nanaimo and Mount Finlayson, Vancouver Island, 1887. (*Macoun.*) Marshes, Burnaby Lake, near Hastings, B.C., 1889. (*J. M. Macoun.*)

(2108.) **V. pedatifida**, G. Don.; Gray, Man., ed. VI., 79. (1890.)

Specimens referred to *V. delphinifolia*, Nutt, Part III., 493, belong here.

(240.) **V. canina**, L., var. **puberula**, Wat. in herb.; Gray, Man., ed. VI., 81. (1890.)

References under *V. canina*, var. *rupestris*, Regel., Part I., 64 & III., 493, belong here.

(243.) **V. pubescens**, Ait., var. **glabriuscula**, Gray, Bot. Gaz., XI., 291.

Specimens referred to var. *scabriuscula*, T. & G., Part I., 64, according to Gray should be called var. *glabriuscula*, as the plant is not really scabrous.

(3081.) **V. præmorsa**, Dougl.; Gray, Bot. Gaz., XI., 289.

V. Nuttallii, var. *præmorsa*, Watson; Macoun, Cat. I., 65.

All the specimens collected on Vancouver Island belong here.

769. TUNICA, Scop.

(3082.) **T. SAXIFRAGA**, Scop.

"Has been introduced in gardens at London, Ont., and become quite a troublesome weed. Specimens were sent to me by Mr. Dearness, of London, Ont., which I referred to Dr. Watson." (*Burgess.*)

770. GYPSOPHILA, Linn.

(3083.) **G. PANICULATA**, Linn.

Introduced at Emerson, Manitoba. July 4th, 1887. (*Prof. Fowler.*)

77. SILENE.

(255.) *S. CUCUBALUS*, Wibel; Gray, Man., ed. VI., 84. (1890.)

References under *S. inflata*, Smith, Part I., 67, belong here.

(256.) ***S. Douglasii***, Hook. Fl. I., 88; Macoun, Cat., I., 67.

This species was gathered in small quantity on the summit of Mount Benson, near Nanaimo, Vancouver Island, altitude 3000 feet, June 8th, 1887. (*Macoun.*)

(2109.) ***S. multicaulis***, Nutt.?

Specimens identical with Howell's Oregon specimens distributed under the above name were collected on the western side of Nicola Lake, June 7th, 1889. (*Macoun.*) I am still of opinion that my Rocky Mountain *Lychnis elata* is either that species or a new one. It is certainly not a *Silene*.

81. ARENARIA.

(292.) ***A. physodes***, DC; Macoun, Cat., I., 73, & III., 292.

Yukon River, N.W.T., Lat. 62°; and Pelly Banks, N.W.T., 1887. (*Dawson.*)

82. STELLARIA.

(3084.) *S. AQUATICA*, Scopoli; Hooker, Student's Flora, 61. (1884.)

Roadsides and ditches at Stratford, Ont. Introduced. July 19th, 1886. (*Burgess.*)

83. CERASTIUM.

(309.) ***C. arvense***, Linn., var. ***oblongifolium***, Holl. & Britt.; Gray, Man., ed. VI., 88. (1890.)

References under *C. oblongifolium*, Torr., Part I., 77, belong here.

81. BUDA, Adns. (*Spergularia.*)

(319.) ***B. marina***, Dumort; Gray, Man., ed. VI., 89. (1890.)

* *Tissa marina*, Britton, Bull. Torr. Bot. Club, XVI., 126.
Spergularia media, Macoun, Cat. I., 85.

Owing to our imperfect knowledge of this genus, our specimens were in some cases placed under the wrong species, but all have lately been examined by Dr. Britton, and we here repeat the localities of our herbarium specimens for each species of the genus. Salt marshes, St. John, N.B. (*Matthews*.) Annapolis, N.S. (*Prof. Fowler*.) Brackish sands along the coast at Brackley Point, Prince Edward Island; North Sydney, Cape Breton; Pictou, N.S.; salt lake, west of Long Lake, and Old Wives' Lakes, Assiniboia; salt marsh, Kamloops, and shore of Burrard Inlet, B.C.; on wet sand, Oak Bay and Nanaimo, Vancouver Island. (*Macoun*.)

(321.) **B. borealis**, Watson; Gray, Man., ed. VI., 90. (1890.)

Tissa salina, Britt., Bull. Torr. Bot. Club, XVI., 129.

Spergularia salina, Macoun, Cat. I., 80.

Salt marshes, coast of Kent Co., N.B. (*Prof. Fowler*.) Gravelly beach, below high-water mark, St. Croix River, St. Stephen, N.B. (*Vroom*.) Salt marshes, Brackley Point, and Mount Stewart, Prince Edward Island; Beesie River, Anticosti, and Restigouche River, Que. (*Macoun*.)

(3084.) **B. marotheca**, Fisch. & Meyer.

Tissa macrotheca, Britt., Bull. Torr. Bot. Club, XVI., 129.

Coast of Vancouver Island, at Beacon Hill and Oak Bay, near Victoria. (*Fletcher*, *Macoun*, *Newcombe*.) Crevices of rocks washed by the sea, Barclay Sound, Vancouver Island. (*Macoun*.)

(320.) **B. rubra**, Dumort; Gray, Man., ed. VI., 89. (1890.)

Tissa rubra, Britt., Bull. Torr. Bot. Club, XVI., 127.

Spergularia rubra, Presl; Macoun, Cat. I., 80.

Bass River, N.B. (*Prof. Fowler*.) Halifax, N.S., and North Sydney, Cape Breton; roadsides near Victoria, Vancouver Island. (*Macoun*.)

92. CLAYTONIA.

(3086.) **C. parviflora**, Dougl.; Hook. Fl. I., 225.

C. perfoliata var. *parviflora*, Torr.; Macoun, Cat. I., 83.

Distinguished from *C. perfoliata* by its spatulate to filiform-linear radical leaves, and its flowers scattered in a loose raceme on slender pedicels. Abundant at Goldstream, Vancouver Island, amongst gravel, May 18th, 1887. (*Macoun*.)

Var. **depressa**, Gray, *Proced. Amer. Acad.*, XIV., 281.

On river banks, probably sand-washes, British Columbia to Oregon. (Gray.) Vicinity of Victoria, Vancouver Island, 1885. (Fletcher.) Abundant on gravel banks at Cedar Hill, Goldstream, Cowichan River, Nanaimo and Qualicum, Vancouver Island, 1887. (Macoun.)

(3087.) **C. arctica**, M. F. Adams.

Extends from the Alaskan shores and islands to adjacent Asia. (Dr. Gray, in *Proced. Amer. Acad. Sci.*, XIV., 279.)

(3088.) **C. tuberosa**, Pall.

Mainly Asiatic, but has been found at Plover Bay by Rothrock; and Muir collected it somewhere in Arctic Alaska. (Dr. Gray l.c.)

(3089.) **C. asarifolia**, Bongard, Veg., Sitche, 137.

C. Sibirica, Linn.; Macoun, Cat., I., 82, in part.

Dr. Gray says this species ranges from the Rocky Mountains in Montana and Idaho to Sitka. Coldwater River, B.C., June 14th, 1877. (Dawson.) Cedar Hill, Goldstream, and Nanaimo, Vancouver Island, 1887. (Macoun.)

(334.) **C. spathulata**, Dougl.; Hook. Fl. I., 226.

C. perfoliata, var. *spathulata*, Torr.; Macoun, Cat., I., 83.

C. gypsophiloides, Fisch. & Meyer.

Small, but comparatively large-flowered, an inch to a span high; cauline leaves from lanceolate-ovate to narrowly lanceolate, rarely connate into a round peltate or cupulate disk. Vicinity of Victoria, Vancouver Island, 1876. (Dawson.) Cedar Hill, and Mount Tolmie, Victoria, Vancouver Island, 1887. (Macoun.)

Var. **tenuifolia**, Gray, *Proced. Amer. Acad.*, XIV., 282.

C. exigua, Torr. & Gray; Macoun, Cat., I., 83.

This has the cauline leaves narrowly linear, and is easily separated from the species by this character alone. Cedar Hill, and Mount Tolmie, near Victoria, Vancouver Island, 1875. (Macoun.)

(337.) **C. sarmentosa**, Bongard, Veg. Sitche., 137.

Dr. Gray says of this species:—"It would seem to be a species intermediate in certain respects between *C. parvifolia* and *C. Chamissonis*

with the alternate leaves of the former, and these broadly ovate, obovate or the radical rotund, the larger of the latter with a blade half an inch long." Specimens collected in the valley of Eagle River at Griffin Lake in the Gold Range, were exactly the same as those found on the coast 350 miles to the west, and identical with all our other specimens of *C. parvifolia*; but those gathered in the bed of the same stream, at an altitude of 6500 feet, were altogether different and undoubtedly *C. sarmentosa*, as the species is defined by Dr. Gray. In addition to his characters, I may remark that all the stems are more or less curved and produce bulblets in the axils.

771. TALINUM, Adns.

(3090.) **T. spinescens**, Torr., Bot., Wilkes, 250.

Mountain slopes west of Stump Lake, B.C. Alt. 3400 feet. Aug. 1888. (*Dawson*.)

93. CALANDRINIA.

(3091.) **C. Columbiana**, Howell. (1886.)

Abundant in crevices of rocks on the summit of Mount Arrowsmith, Vancouver Island. Alt. 5500 feet, July 17th, 1887. (*Macoun*.) The plant collected by Lyall on the boundary of British Columbia is now referred to this species by Mr. T. Howell.

97. HYPERICUM.

(343.) **H. Ascyron**, Linn.; Coulter, Bot. Gaz. XI., 83.

References under *H. pyramidatum*, Ait., Part I., 84, belong here.

(347.) **H. maculatum**, Walter; Coulter, Bot. Gaz., XI., 107.

References under *H. corymbosum*, Muhl., Part I., 85, belong here.

(349.) **H. Canadense**, Linn. var. **minimum**, Choisy; Coulter, Bot. Gaz., XI., 110.

H. anagalloides, Macoun, Cat. I., 85.

Dwarf 1 to 3 inches high, simple, few-flowered; leaves oblong, obtuse, 4 to 5 lines long, a line or two wide, smaller and more crowded below. Wet springy places, Cypress Hills, Assiniboia, Aug. 8th, 1880. (*Macoun*.)

- (350.) **H. formosum**, HBK. var. **Scouleri**, Coulter, Bot. Gaz., XI, 108.

References under *H. Scouleri*, Hook., Part I., 85, belong here.

- (351.) **H. anagalloides**, Cham. & Schlecht; Coulter, Bot. Gaz., XI, 109.

In ditches and wet gravelly places. Mount Finlayson, 10 miles from Victoria, Vancouver Island. (*Fletcher*.) Common at Nanaimo, Qualicum, Comox and Horne Lake, Vancouver Island; Lulu Island, mouth of Fraser River, and Burrard Inlet at Hastings, B.C. (*Macoun*.)

98. ELODES, Adns.

- (353.) **E. campanulata**, Pursh.; Coulter, Bot. Gaz., XI, 111.

References under *E. Virginica*, Nutt., Part I., 86, belong here.

89. MALVA.

- (3092.) **M. borealis**, Wallm.; Torr., Mex. Bound. Rep., 38. = *M. fr.*

On ballast at Nanaimo, Vancouver Island, July, 1887. (*Macoun*.)

101. SIDALCEA.

- (361.) **S. malvæflora**, Gray; Macoun, Cat. I., 87.

In Part I., 87, this and the next were considered one species. When Part III. (page 501) was published, we had reached the conclusion that we had also Watson's var. *Oregana*. Since then, Dr. Gray has elaborated the genus, and our herbarium specimens are divided as below. In dry thickets at Oak Bay, and Cedar Hill, near Victoria, Vancouver Island. (*Macoun*.)

- (3093.) **S. Oregana**, Gray, Pl., Fendl., in part; Proceed. Amer. Acad. XIV., 237.

Grassy slopes near Victoria, Vancouver Island. (*Fletcher*.) Abundant in salt marshes at Qualicum and Alberni, Vancouver Island. (*Macoun*.)

104. SPHÆRALCEA.

- (365.) **S. acerifolia**, Nutt.; Gray, Proceed. Amer. Acad. XIV., 294.

S. rivularis, Torr.; Macoun, Cat., I., 88, & III., 501.

There are two forms of this species in British Columbia. One of a slender habit, with five-lobed small leaves, the lobes obtuse or short pointed, growing in thickets at Shuswap and Enderby, B.C.; the other a much stouter plant with coarse, generally five-lobed leaves, lobes with long tapering points, stems almost smooth. Salmon Arm, Shuswap Lake, B.C. (*Macoun*), and Elk River, Rocky Mountains. (*Dawson*.)

106. LINUM.

(372.) **L. Lewisii**, Pursh, Fl. I., 210; Trelease, Trans. St. Louis Acad. Science, V., 12.

L. perenne L. var. *Lewisii*, Eat. & Wright; Gray, Man., ed. VI., 102.

References under *L. perenne*, Linn., Part I., 89, belong here.

107. GERANIUM.

(3094.) **G. DISSECTUM**, Linn.; Gray, Man., ed. VI., 104.

Introduced in a few places in Canada. Port Arthur, west of Lake Superior. (*Dr. Britton*.) Vicinity of Victoria, and at Nanaimo, Vancouver Island. (*Macoun*.)

121. CEANOTHUS.

(402.) **C. ovatus**, Desf.; Macoun, Cat. I., 96.

Along the St. Clair River east of Point Edward, Ont. (*J. Dearness*.)

573. LIMNANTHES.

(2116.) **L. Macounii**, Trelease, Rev. of Geran.

L. Douglasii, Macoun, Cat., III., 502.

Pterkia proserpinacoides, Macoun, Cat., I., 91, in part.

Glabrous, 2-3 inches high; divisions of the leaves 5-9, remote, 3-6 mm. long, ovate, mostly 3-cleft, their lobes broad and very acute; flowers, 4-merous, not showy as in the other species; sepals oblong, rather obtuse, enlarging somewhat in fruit; petals white (?), oblong-cuneate, erosely truncate, 3-4 mm. long; stamens about equalling the petals, anthers 4 mm. long; fruit obovoid, 3 mm. long, with very prominent tubercles. (*Trelease*.)

Professor Trelease in his Revision of the Geraniaceae made this a new species and named it after the discoverer.

115. ILEX.

(395.) **I. verticillata**, Gray, var. **tenuifolius**, Eaton & Wright.

"Both the type (*Prinos verticillatus* L.) and this variety are found at London. The variety (by their description) is much the commoner form, is only slightly pubescent on the veins beneath the leaves, and grows in very wet places, often in water. The type occupies drier, but still damp, places, and has the whole under surface of the leaves, woolly pubescent." (*Burgess*.)

121. RHAMNUS.

(406.) **R. Purshiana**, DC.; Macoun, Cat. I. 96, & III., 504.

A small tree in damp thickets in every part of Vancouver Island as far north as Comox; on the mainland as far east as Sicamous in the Gold Range, B.C. 1889. (*Macoun*.)

127. RHUS.

(429.) **R. Canadensis**, Marsh.; Gray, Man. ed. VI., 119.

References under *R. aromatica*, Ait., Part I., 101, belong here.

129. LUPINUS.

(3095.) **L. aridus**, Dougl., Hook. Fl. I., 165.

Grassy slopes of Za-kwas-ki Mountain, head of Nicoamen River, B.C. Alt. 6,500 feet, Aug. 1889. (*Dawson*.)

(3096.) **L. microcarpus**, Sims.; Torr. & Gr., Fl. I., 371.

Abundant on the face of the clay cliff, fronting beach, near Beacon Hill, Victoria, Vancouver Island. 1887. (*Macoun*.)

(443.) **L. micranthus**, Dougl., var. **microphyllus**, Wat.

Specimens referred to *L. micranthus*, var. *bicolor*, Wat., Part I., 103, belong here.

(3097.) **L. ——— ?**

This fine species is related to *L. laxiflorus*, but Dr. Watson thinks it scarcely identical. Abundant at Kamloops and at the southern end of

Shuswap Lake, B.C. 1889. (*Macoun*.) Specimens of this or a closely related species were obtained on the Upper Liard River, Lat. 60°, N.W.T., in the summer of 1887, by Dr. Dawson.

132. TRIFOLIUM.

(3098.) **T. cyathiferum**, Lindl. ; Torr. & Gr., Fl. I., 320.

Dry gravel along the Cowichan River, Vancouver Island, 1887 $\frac{1}{2}$; on dry ground, Penticton, at the southern end of Lake Okanagan, B.C., 1889. (*Macoun*.)

133. MELILOTUS.

(3099.) **M. PARVIFLORA**, Desf. ; Torr. & Gr., Fl. I., 321.

Introduced. Ballast heaps at Pictou, N.S., 1883. (*Macoun & Burgess*.) Ballast at Nanaimo, Vancouver Island, 1887. (*Macoun*.)

134. MEDICAGO.

(468.) **M. DENTICULATA**, Willd., var. **APICULATA**, Willd. ; Hooker, Student's Flora, 95. (1884.)

Introduced. On ballast at Nanaimo, Vancouver Island, 1887. (*Macoun*.) Flower very small, yellow ; stipules laciniate, pod coiled, reticulate but not spinose.

574. TRICONELLA.

(2122.) **T. HAMOSA**, Linn. ; Macoun, Cat. III., 506.

References under *T. corniculata*, Linn., Part III., 506, belong here.

136. HOSACKIA.

(472.) **H. bicolor**, Dougl. ; Macoun, Cat. I., 107.

In water in the bed of a brook, near the "Half-way House," between Nanaimo and Wellington Mine, Vancouver Island, 1887. (*Macoun*.)

(475.) **H. Purshiana**, Benth. ; Macoun, Cat. I., 108.

Dry prairies, Souris Co., Man. (*Thos. Walker*.) Griswold, Man. (Rev. A. Burman.) On rocks by the sea at Esquimaux, Vancouver Island. (*Macoun*.)

- (3100.) **H. subplinnata**, Torr. & Gray, Fl. I., 326.

Grassy places along the coast at Oak Bay and Beacon Hill, near Victoria, Vancouver Island, 1887; at the first tunnel above Yale on the C. P. Ry., and at Spence's Bridge, Kamloops, and Lake Okanagan, B.C. (*Macoun.*) Open ground, North Thompson River, B. C. (*J. M. Macoun.*)

142. ASTRACALUS.

- (3101.) **A. Mortoni**, Nutt.; Torr. & Gr., Fl. I., 330.

On sandy and gravelly soil in thickets at Trout Creek, near the southern end of Lake Okanagan, B.C., 1889. (*Macoun.*)

- (523.) **A. stenophyllus**, Torr. & Gray, Fl. I., 329.

A. collinus, Macoun, Cat. I., 114, in part.

A. filipes, Torrey, Bot. Wilkes, 278.

Dry slopes Nicola Valley, 1877. (*Dawson.*) Abundant in the Nicola Valley and around Nicola and Stump lakes, B.C., 1889. (*Macoun.*) Good fruiting specimens were obtained. This is No. 523 of Part I., 115, which I was unable to determine, having only flowering specimens.

145. DESMODIUM.

- (540.) **D. canescens**, DC.; Macoun, Cat. I., 118.

Not rare at Point aux Pins, Kent Co.; and abundant at Point Pelee, Essex Co., Ont. Growing in rather low-lying wet sandy thickets. (*Burgess.*)

577. ONOBRYCHIS.

- (2130.) **O. SATIVA**, Lam.; Macoun, Cat. III., 511.

Cultivated on irrigated lands at Spence's Bridge and Kamloops, B.C., and escaped to brooksides. (*Macoun.*)

147. VICIA.

- (554.) **V. Americana**, Muhl., var. **truncata**, Brewer.

Thickets and borders of woods, Kananaskis Station, Rocky Mountains, 1885; thickets at Agassiz, B.C., 1889; and at Beacon Hill and Gordon Head, near Victoria, and Nanaimo, Vancouver Island, 1887. (*Macoun.*)

148. LATHYRUS.

(3102.) **L. Nuttallii**, Watson, *Proced. Amer. Acad.*, XII., 450.

L. venosus, Macoun, *Cat. I.*, 121, in part.

Stout and tall, more or less pubescent throughout, with loose woolly hairs; stipules, semi-sagittate, rather narrow; leaflets, 3 to 6 pairs, variable, narrowly or broadly elliptical, usually acute or acutish at both ends, apiculate, 1 or 2 inches long; rachis, tendril-bearing; peduncle shorter than the leaves, few-flowered; calyx teeth triangular, acuminate, the lower somewhat larger; petals reddish purple, 6 to 8 lines long; pod, glabrous, oblong, attenuate to a very short thick stipe, 1 to 1½ inches long by 4 lines wide; seeds, globose, brown. Common in thickets in British Columbia and Vancouver Island. In Part I, 121, this species was included in *L. venosus*, but is now separated by Dr. Watson.

155. PRUNUS.

(573.) **P. Virginiana**, Linn., *Var. (?)*.

A form of this species, with very long deciduous sepals occurs in British Columbia, extending from the Fraser Valley northward to Telegraph Creek.

157. SPIRÆA.

(580.) **S. Douglasii**, Hook. *var. Menziesii*, Presl; Macoun, *Cat. I.*, 127.

This variety is very common throughout British Columbia and Vancouver Island, while the type of the species is confined to Vancouver Island, as far as our knowledge of it extends.

A variety which we refer to *S. salicifolia*, was gathered at Sicamous in July, 1889. It would pass in the east for *S. salicifolia*, as it has a large branching panicle, white flowers, and long exserted stamens. So far *S. salicifolia* has not been found west of the Rocky Mountains, but is reported from the far north.

158. PHYSOCARPUS. (*Neillia*.)

(584.) **P. opulifolius**, Maxim.; Gray, *Man.*, ed. VI., 153. (1890.)

References under *Neillia opulifolia*, Benth. & Hook., Part I, 127, belong here.

160. RUBUS.

(593.) **R. stellatus**, Smith; Macoun, Cat., I., 130.

Port Simpson, coast of Northern British Columbia. (*Anderson.*)

(598.) **R. strigosus x leucodermis.**

A hybrid evidently between *R. strigosus* and *R. leucodermis* was found growing in profusion and fruiting abundantly on the hillsides, between the railway station and the hotel; and at other places at Sicamous, B.C. The fruit was very like that of *R. neglectus*, Peck, which is an undoubted hybrid between *R. strigosus* and *R. occidentalis*, but much more abundant and larger.

167. FRACARIA.

(620.) **F. Virginiana**, Duch., var. **Illinoensis**, Gray.

Of all the specimens of this species in our collection, only one collected at Ottawa, Ont., by J. M. Macoun can be referred here. Collectors in western Ontario should look out for it.

171. POTERIUM.

(658.) **P. Sitchense**, Watson; Macoun, Cat. I., 143 & III., 519.

Salt marshes along the Alberni Canal, and Barclay Sound, Vancouver Island. (*Macoun.*) Lake Lindeman, Lat. 59°, B.C.; near the mouth of Lewes River, Lat. 62°, N.W.T. (*Dawson.*)

(2133.) **P. SANGUISORBA**, Linn.; Macoun, Cat. III., 519.

Introduced in grass seed in the Township of Massagawga, Halton Co., Ont. June, 1888. (*J. Alston Moffatt.*)

(2134.) **P. annuum**, Nutt.; Macoun, Cat. III., 519.

Abundant in the streets of Victoria, and in fields near Esquimaux, Vancouver Island; also in fields at Spence's Bridge, B.C., 1889. (*Macoun.*)

172. ROSA.

(3103.) **R. Engelmanni**, Watson; Gray, Man. ed. VI., 162. (1890.)

Whiskey Island, Lake Huron, shores of Lake Superior, and west to

the Red River Valley. (*Watson*.) The specimens from Whiskey Island were collected by Dr. John Bell in 1866. Other specimens gathered on Burnt Island, Lake Nepigon, in 1884, are also referred here by Mr. G. N. Best, Rosemount, New Jersey. Mr. Best, however, believes that both the Nepigon specimens and all my specimens of *R. Sayii*, belong to *R. acicularis*, Lindl., or var. *Bourgeauiana*, Crepin.

(2135.) **R. Sayii**, Schwein; Macoun, Cat. III., 520.

Whether this rose retains this name, or is placed under some other, we now know that it is our most northern rose, and extends from the Gulf of St. Lawrence to Lake Mistassini, Severn River, Upper Liard River, and the Lewes River, a branch of the Yukon, in Lat. 62°.

(2138.) For **R. Woodsii**, Wat., read **R. Woodsii**, Lindl.

NOTE.—Mr. G. N. Best, of Rosemount, New Jersey, has examined all our mounted specimens of the genus *Rosa*, and has made a number of changes in our arrangement of specimens under certain species. As he has taken copious notes, and intends to publish them with other notes on roses, we make no changes except in the above instances (*R. Sayii* and *R. Engelmanni*), and in the following: *R. Californica* and *R. micrantha* must be cancelled, the latter going to *R. rubiginosa*, and the specimens retained in Part. III., 520, under the former, are referred doubtfully to *R. pisocarpa*.

174. CRATÆGUS.

(678.) **C. coccinea**, Linn.; Macoun, Cat. I., 147.

Since the publication of Part I. this species has been greatly extended, and now includes much of *C. tomentosa*, Gray, Man., ed. V., 160.

Var. **macracantha**, Dudley; Gray, Man., ed. VI., 165.

C. tomentosa, Macoun, Cat., I., 147, in part.

This includes all *C. tomentosa* from Nova Scotia to west of Manitoba, except specimens from the south-western part of Ontario at Amherstburgh and Point Edward.

Var. **mollis**, Torr. & Gray; Man., ed. VI., 165.

C. subvillosa, Schrad.; Macoun, Cat., I., 147.

C. tomentosa, Linn., var. **mollis**, Gray, Man., ed. V., 160.

Queenston Heights and westward along Lake Erie to Amherstburgh, Ont. (*Macoun*.)

- (3104.) **C. punctata**, Jacq.; Gray, Man., ed. VI., 166. (1890.)

C. tomentosa, var. *punctata*, Gray; Macoun, Cat. I., 147.

All the large fruited, small-leaved forms of *C. tomentosa*, belong here. The *C. Crus-galli* of all localities east of Hamilton, should be referred here, as that species is confined to south-western Ontario.

176. SAXIFRAGA.

- (3105.) **S. occidentalis**, Watson, Proceed. Amer. Acad., XV., 264.

"Resembling *S. Virginensis*; leaves often more or less densely rufous tomentose beneath; inflorescence open, glabrous or somewhat glandular-pubescent; calyx free from the pistils, cleft nearly or quite to the base, the segments very obtuse, not reflexed; petals white, oblong-obovate, obtuse; filaments slender; seeds with a loose, smooth testa. From the Rocky Mountains of British America (*Drummond*) to British Columbia." (*Lyall*.) Summit of Mount Finlayson, 10 miles from Victoria; on Mount Arrowsmith, Vancouver Island, altitude 5500 feet; also at Yale and Lytton, B.C., 1889. (*Macoun*.)

- (700.) **S. reflexa**, Hook.; Macoun, Cat., I., 152.

On small islands in the entrance to the North Arm of Burrard Inlet, B.C. 1889. (*Macoun*.)

- (706.) **S. stellaris**, Linn., var. **comosa**, Poir.; Macoun, Cat., I., 153.

Under this we placed, in Part I, *S. foliosa*, R. Br., as a synonym. Specimens since collected in the Selkirk Mountains and Gold Range of British Columbia, are Robert Brown's species, but very far from being *S. stellaris*, var. *comosa*, which is an unbranching form.

- (3106.) **S. foliosa**, R. Brown; Torr. & Gray, Fl. I., 570.

"Radical leaves cuneiform, slightly toothed; scapes divided, the branches one flowered at the summit, and at their base clothed with a cluster of minute fascicled leaves; calyx inferior, obovate; limb of the petals cordate-lanceolate. Seems to be distinct from *S. stellaris* by the dense clusters of little leaves on the scapes, the flowers are few (or none), the obovate calyx, and particularly by the lamina of the equal petals being cordate at the base." (*R. Brown*.) On Bear Creek, Roger's Pass, Selkirk Mountains, and on the Gold Range at Griffin Lake, B.C. (*Macoun*.) Mount Queest, Shuswap Lake, B.C. 1889. (*J. M. Macoun*.)

178. TOLMIEA.

(717.) **T. Menziesii**, Torr. & Gray; Macoun, Cat. I., 155.

Abundant in rich damp woods at Hastings, and Port Haney, Fraser Valley, B.C., 1889. (*Macoun.*)

180. TIARELLA.

(3107.) **T. laciniata**, Hook., Fl. I., 239; Torr. & Gray, Fl. I., 588.

This species is included in *T. trifoliata* in Watson's Index of the Polypetalæ, but specimens collected on Vancouver Island two years ago satisfy me that they are distinct. They differ as much in habit as in appearance, for while one is at home in the rich woods near the sea, the other is found only on stones in mountain brooks. Besides being laciniate, the leaves are smaller and thinner, of a brighter green, and more delicate in every way. On stones in mountain brooks flowing from Mount Arrowsmith, Vancouver Island. Alt. 2000 feet. 1887. (*Macoun.*)

189. SEDUM.

(3108.) **S. Oreganum**, Nutt.; Torr. & Gray, Fl. I., 559.

Abundant on rocks on a small islet at the head of Horne Lake; also on mounts Mark and Arrowsmith, Vancouver Island, 1887. (*Macoun.*)

192. MYRIOPHYLLUM.

(3109.) **M. alternifolium**, DC.

Julianshaub, Greenland. (*Rosenvinge.*) Lake Memphamagog, Que. July, 1886. (*Dean, vide Morong.*)

578. CALLITRICHE.

(3110.) **C. Bolanderi**, Hegelm; Bot. Calif., II., 77.

Abundant in muddy pools at Alberni, and along Somas River, on the west coast of Vancouver Island, 1887; also at Hastings, Port Moody, and Agassiz, B.C. 1889. (*Macoun.*)

(2147.) **C. autumnalis**, Linn.; Macoun, Cat., III., 530.

North of the Saskatchewan. (*Dr. Richardson.*) In pools, Bonaparte

River, B.C., 1889. (*J. M. Macoun.*) In a pond on the Reservation at Kamloops; and abundant in Griffin Lake, Gold Range, B.C., 1889. (*Macoun.*) Mr. A. Bennett believes that our North American *C. autumnalis* will have to be separated from the European form as a variety.

(3111.) **C. heterophylla**, Pursh; Gray, *Man.*, ed. VI., 182. (1890.)

In flowing water, Moose Jaw Creek, Assiniboia, July 18th, 1880. (*Macoun.*) Mr. A. Bennett states that this is *C. Asagraya*, Hegel. *Mon.* pl. 3, fig. 9 & pl. 4, fig. 1.

(3112.) **C. hamulata**, Kütz.

In the Spullamachcen River at Enderby, B.C., 1889. (*J. M. Macoun.*) On Mount Mark, Vancouver Island, 1887. The Vancouver Island specimens are without fruit and doubtfully referred to this species by Mr. A. Bennett. (*Macoun.*)

198. CODETIA.

(3113.) *G. HISPIDULA*, Watson, *Bot. California*, I., 231.

Introduced on ballast heaps, at Nanaimo, Vancouver Island, 1887. (*Macoun.*)

196. EPILOBIUM.

Many additional species and varieties of *Epilobium* have been added to our flora since the publication of Part III., but our whole series of this genus is now being examined by Prof. Trelease who is unable to report upon them in time to include them in this Part.

204. LYTHRUM.

(822.) **L. Salicaria**, Linn.; *Macoun, Cat.*, I., 175, & III., 539.

Low river bank, Byron, near London, Ont. (*J. A. Balkwill.*)

772. CUPHEA, Jacq.

(3114.) *C. viscosissima*, Jacq.; Gray, *Man.*, ed. VI., 186. (1890.) (*Clammy Cuphea.*)

In cultivated fields between Hamilton and St. Catherines, Ont.

206. MENTZELIA.

(3115.) **M. dispersa**, Watson, Bot. California, I., 236.

Abundant at Lytton and Spence's Bridge, B.C., 1889, especially along the railway. (*Macoun.*)

212. HYDROCOTYLE.

(3116.) **H. UMBELLATA**, Linn., Spec., 234.

On ballast heaps on the coal wharf at Nanaimo, Vancouver Island. Without doubt introduced. (*Macoun.*)

773. CRANTZIA, Nutt., Gen. I., 178.

(3117.) **C. lineata**, Nutt.; C. & R. Rev. of N. Amer., Umbell, 92.

Abundant in saline marshy spots from Nanaimo along the sea shore to the mouth of Nanaimo River; also at the head of James Bay, Victoria, Vancouver Island, 1887. (*Macoun.*)

213. SANICULA.

(836.) **S. Marylandica**, Linn.; C. & R. Rev. of N. Amer., Umbell, 102.

Coulter and Rose give the range of this species only westward to the Rocky Mountains. In Canada it ranges quite across the continent, and is found, though rarely, on Vancouver Island. (*Macoun.*)

Var. **Canadensis**, Torr. Fl. U.S., 302.

S. Canadensis, Linn.; Macoun, Cat., I., 179.

There is now no doubt that this is only a variety of *S. Marylandica*, and references under that species in Part I. belong here.

(3118.) **S. Howellii**, C. & R. Bot. Gazette, XIII., 81.

"Stems coarse, a foot or less high, more or less buried in the sand (or earth), often bearing tufts of stout elongated peduncles and leaves; leaves broad and palmately three to five-lobed (often much modified by being buried in the sand), the upper inclined to be pinnately lobed, the divisions rather sharply cut and toothed, the teeth mucronate-tipped; umbels unequally few-rayed, with involucre of few leaf-like

bracts, and involuclers of very prominent bractlets, sometimes much exceeding the large globose head of fruit; flowers yellow; fruit short pedicellate, prickly all over, $1\frac{1}{2}$ to 2 lines long, seed face concave." On clay cliffs Beacon Hill, Victoria, Vancouver Island. 1887. (*Macoun*.)

(3119.) **S. Nevadensis**, Watson, Proceed. Amer. Acad. XI., 139.

"Stem slender, sometimes very short, simple, or branching near the base, a foot or less high; leaves ternate, the divisions oblong-ovate, 3 to 5-lobed; the segments lobed or toothed; umbel with about 5 rays, which are sometimes branched and become $\frac{1}{2}$ to $1\frac{1}{2}$ inches long in fruit, involuere of pinnatifid leaf-like bracts, and involuclers of small oblong acute bractlets; flowers yellow, the sterile ones pedicelled, fruit prickly all over, $1\frac{1}{2}$ lines long; seed face plane." On dry rocky hills near Victoria and Nanaimo, Vancouver Island, 1887. (*Macoun*.) Thickets, Cadboro Bay, Vancouver Island, 1885. (*Fletcher*.)

215. MUSENIUM.

(842.) **M. brachyspermum**, Nutt.; Torr. & Gray, Fl. I., 642.

References under *M. divaricatum*, Nutt., var. *Hookeri*, Part I., 180, and *M. tenuifolium*, Part I., 180, belong here.

218. CARUM.

(846.) **C. Cairdneri**, Benth. & Hook.; Macoun, Cat., I., 180 & III., 533.

The references given in Parts I. & III. belong only in part to this species; the remainder to the next. North Fork of Old Man River, Alberta. (*Dawson*.) Cypress Hills, Alberta; and very common in thickets at Cedar Hill, Comox, and Alberni, on Somas River, Vancouver Island. 1887. (*Macoun*.)

(3120.) **C. Oreganum**, Watson, Proceed. Amer. Acad., XII., 368.

In the dry beds of brooks near the Hand Hills, Alberta; also in a dry thicket near Victoria, Vancouver Island. 1887. (*Macoun*.)

774. ZIZIA, Koch.

(849.) **Z. aurea**, Koch; C. & R. Rev. of *W. Amer.*, Umbell. 127.

Thaspium aureum, Macoun, Cat. I., 181.

Thaspium aureum, var. *apterum*, Gray, *Man.*, ed. V., 195. (1867.)

All our herbarium specimens of *T. aureum* belong here, but some of the references given in Part I. may belong to the true *T. aureum*.

(3121.) **Z. cordata**, Koch; Hook., Fl. I., 260.

Thaspium trifoliatum, Gray; Macoun, Cat. I., 181, in part.

All the specimens in our possession from the eastern part of the prairie region have been referred here by Coulter and Rose, while those from the base of the Rocky Mountains are placed under *Thaspium*.

220. THASPIUM.

(350.) **T. aureum**, Nutt., var. **trifoliatum**, C. & R. Rev. of N. Amer. Umbell., 83.

T. trifoliatum, Macoun, Cat. I., 181, in part.

The only specimen of this species in our collection is from Kananaskis Station at the eastern base of the Rocky Mountains; collected 1885. (*Macoun*.)

221. CICUTA.

(852.) **C. virosa**, Linn.; Macoun, Cat. I., 182.

To the species, which is wholly a northern form, Coulter and Rose unite *C. maculata* as a variety. It, therefore, becomes—

Var. **maculata**, C. & R., Rev. of N. Amer., Umbell., 130.

C. maculata, Linn.; Macoun, Cat. I., 181.

This includes all the more southern specimens and localities, and crosses the continent to the Pacific coast and Vancouver Island. (*Macoun*.)

Var. **Californica**, C. & R. Rev. of N. Amer., Umbell., 130.

C. Californica, Gray, Proceed. Amer. Acad., VII, 344.

Lost Lake, near Cedar Hill, and by ponds near Esquimault, Vancouver Island, 1887. (*Macoun*.)

579. BERULA.

(2150.) **B. angustifolia**, Koch; Macoun, Cat. III., 534.

Abundant in the stream that enters the north-western arm of Lake Okanagan; quite common in a pond on the Reservation at Kamloops, B.C., 1889. (*Macoun*.)

225. BUPLEURUM.(857.) **B. Americanum**, C. & R. Rev. of N. Amer. Umbell., 115.*B. ranunculoides*, Macoun, Cat., I., 182.

"Radical leaves linear lanceolate; cauline ones very variable, oblong to linear, more or less clasping; rays unequal, $\frac{1}{2}$ to 2 inches long; pedicels short." In general appearance this species resembles the European *B. ranunculoides*, but is distinguished as above. All references in Parts I. & III., belong here. Pelly River, Lat. 61°, N.W.T., 1887. (*Dawson*.)

226. OSMORRHIZA.(861.) **O. occidentalis**, Torr. Mex. Bound. Rep., 71.*Glycosma occidentalis*, Nutt.; Macoun, Cat., I., 183.

This species with others have been united to *Osmorrhiza* by Coulter & Rose, in their late revision.

230. LIGUSTICUM.(3122.) **L. Grayi**, C. & R., Rev. of N. Amer. Umbell., 88.

"Stems 1 to 2 feet high, with leaves all nearly radical, and glabrous inflorescence; leaves ternate then pinnate; rays, with involucels of several narrowly linear elongated bractlets; rays, 1 to 2 inches long; pedicels 2 to 4 lines long, with short conical stylopodia, and narrow, prominent almost winged ribs; oil-tubes 3 to 5 in the intervals, 8 on the commissural side; seed strongly flattened dorsally, with angled back, and face but slightly concave, with no central ridge." Very abundant on the summit of the Gold Range at Griffin Lake, B.C., Aug., 1889. (*Macoun*.)

584. CENANTHE.(2206.) **C. sarmentosa**, Presl; DC., Prodr. IV., 138; Macoun, Cat. III., 537.

Very common in ditches and marshy places throughout Vancouver Island; also common in the Fraser Valley west of Yale, B.C. (*Macoun*.)

775. CONIOSELINUM, Fisch.(886.) **C. Canadense**, Torr. & Gray, Fl. I., 619.

References under *Selinum Canadense*, Part I., 184, belong here.

231. SELINUM.

(867.) **S. Pacificum**, Watson, *Proced. Amer. Acad.*, XI., 140.

Specimens referred here doubtfully, because they were too young, were collected at China or Atlat Creek, and other points along Alberni Canal and Barclay Sound, Vancouver Island, 1887. (*Macoun.*)

(3123.) **S. Dawsoni**, C. & R., *Bot. Gazette*, XIII., 144.

"A foot or so high, glabrous; leaves ternate, then pinnate, the small ($\frac{1}{4}$ to $\frac{1}{2}$ inch long) ovate acute segments laciniately toothed to entire; umbel, with involuclers of linear-oblong scarious bractlets longer than the pedicels, and abruptly ending in a long attenuation; pedicels, 1 to 2 lines long; fruit oblong, smooth, about 2 lines long, with prominent wings, the lateral ones but little broader; rarely an additional small oil-tube in a lateral interval, seed hardly at all dorsally sulcate.

This interesting species is quite distinct from all other species of *Selinum* in its leaf and involucler characters, as well as in the prominent thin wings of the fruit. Pelly River at Pelly Banks, Yukon District, Lat. 61°, Aug. 11th, 1887. (*Dawson.*)

232. ANGELICA.

(869.) **A. genuflexa**, Nutt.; Torr. & Gray, *Fl. L.*, 620; *Macoun*, *Cat. I.*, 185.

Abundant at Griffin Lake, Sicamous, Agassiz, and other localities to the coast at Burrard Inlet, B.C.; also at Qualicum and Alberni, Vancouver Island. (*Macoun.*)

(871.) **A. atropurpurea**, Linn., *Spec.*, 251.

References under *Archangelica atropurpurea*, Hoffm., *Part. I.*, 185, belong here.

(873.) **A. hirsuta**, Muhl., *Cat. ed. II.*, 30.

References under *Archangelica hirsuta*, Torr. & Gray; *Macoun*, *Cat. I.*, 186, belong here.

776. CÆLOPLEURUM, Ledeb., Fl. Ross. II., 361.

(872.) **C. Gmelini**, Ledeb.; C. & R. *Rev. of N. Amer. Umbell.* 90.

Archangelica Gmelini, DC.; *Macoun*, *Cat. I.*, 186.

Along both sides of Burrard Inlet, and common on the coast of Vancouver Island; also at Brackley Point, Prince Edward Island. (*Macoun.*)

777. PHELLOPTERUS, Benth., Gen. Plant, I., 905.

(3124.) **P. littoralis**, Schmidt; C. & R. Rev. of N. Amer. Umbell., 81.

Lying prostrate on the sandy beach at Fuller's Farm, Oak Bay, near Victoria, Vancouver Island, 1887. (*Macoun.*)

778. PASTINACA, Linn., Gen. No. 362.

(882.) **P. SATIVA**, Linn.; C. & R. Rev. N. Amer. Umbell., 49.

References under *Peucedanum sativum*, Part I., 187, belong here.

235. PEUCEDANUM.

(878.) **P. ambiguum**, Nutt.; Torr. & Gray, Fl. I., 626.

On dry hills at Lytton, Yale, Stump Lake, Kamloops and Sicamous, B.C., 1889. (*Macoun.*)

(3125.) **P. eurycarpum**, C. & R., Rev. of N. Amer. Umbell., 61.

P. macrocarpum, var. (?) *eurycarpum*, Gray; Macoun, Cat. III., 536.

On the hills, on the north side of Kicking Horse River, at Golden, Columbia Valley, 1885; quite common at Spence's Bridge, and on the arid hills along the Thompson River to Lytton, B.C. (*Macoun.*)

(877.) **P. triternatum**, Nutt.; Torr. & Gray, Fl. I., 626.

On rocks at Lytton, and along the Fraser River above it, 1889. (*Macoun.*)

(3026.) **P. nudicaule**, Nutt.; Torr. & Gray, Fl. I., 627.

Open prairie, Souris Co., Man., 1889. (*T. Walker.*)

(2154.) **P. villosum**, Nutt.; Watson, King's Rep., V., 131.

Moose Mountain, Assiniboia, 1884. (*J. M. Macoun.*) Moist banks, Souris Co., Man., 1889. (*T. Walker.*)

(2155.) **P. Sandbergii**, C. & R., Bot. Gazette, XIII., 79.

P. ———? No. 2155, Macoun, Cat. III., 536.

"Caulescent, branching at base, an inch or two to a foot high, from an elongated slender root, rough puberulent; petioles wholly inflated, with a very conspicuous white scarious margin; leaves ternately or pinnately dissected, the ultimate segments very short linear; umbel very unequally, 6 to 15-rayed, with involucels of distinct linear-lanceolate bractlets; rays, 1 to 4 inches long; pedicels, a line or two long; flowers, bright yellow; fruit, ovate, puberulent, 2 to 2½ lines long, 1½ lines broad, with very narrow wings, and filiform dorsal and intermediate ribs; oil-tubes, 4 or 5 in the intervals, 6 on the commissural side; seed-face, plane." North and South Kootanie passes and summit of Crow Nest Pass, Rocky Mountains. (*Dawson.*)

(3127.) **P. Martindalei**, C. & R., var. **augustatum**, C. & R., Bot. Gazette, XIII., 143.

"Usually more caulescent than the species and sometimes taller, with more dissected leaves, and wings of fruit about half a line wide, making a fruit about 2 lines wide."

Summit of Mount Mark, altitude 3300 feet; and Mount Arrowsmith, altitude 5500 feet, Vancouver Island, 1887. (*Macoun.*)

237. **LEPTOTÆNIA**, Nutt., Torr. & Gray, Fl. I., 629.

(884.) **L. dissecta**, Nutt.; Torr. & Gray, Fl. I., 630.

Ferula dissoluta, Watson; Macoun, Cat. I., 188.

Câche Creek Mountain, B.C. (*Macoun.*)

(885.) **L. multifida**, Nutt.; Torr. & Gray, Fl. I., 630.

Ferula multifida, Gray; Macoun, Cat. I., 188.

On dry hillsides at Sicamous, Kamloops, Spence's Bridge and Lytton, B.C., 1889. (*Macoun.*)

239. **TIEDEMANNIA**, DC.

(888.) **T. rigida**, C. & R., Rev. of N. Amer. Umbell., 64.

References under *Archemora rigida*, Part I., 188, belong here.

242. CORNUS.(3128.) **C. Baileyi**, Coulter & Evans, Bot. Gaz., XV., 37.*C. stolonifera*, Macoun, Cat. I., 190, in part.

"Erect shrub, with reddish-brown, mostly smooth branches; branchlets and inflorescence pubescent to woolly; petioles 6 to 25 mm. long; leaves from lanceolate to ovate, acute or short-acuminate, acute or obtuse at base, appressed-pubescent to glabrate above, white beneath, and with woolly hairs variously intermingled with appressed ones (or in some cases all appressed), 2.5 to 12 cm. long, 1.2 to 7.5 cm. wide; flowers in small, rather compact cymes; calyx-teeth from small to prominent; fruit white; stone decidedly compressed, flat-topped, rarely oblique, with a very prominently furrowed edge, much broader than high (3 mm. high, 4 to 6 mm. broad)."

Low grounds at the mouth of Nepigon River, Lake Superior; "River That Turns," near the source of the Qu'Appelle River, Assiniboia (Macoun); Cypress Hills, Alberta. (J. M. Macoun.) North Fork of Old Man River, Rocky Mountains. (Dawson.) Probably common between Lake Superior and the Rocky Mountains. (Macoun.)

245. SAMBUCUS.(3129.) **S. glauca**, Nutt.; Torr. & Gray, Fl. II., 13.

In the vicinity of Victoria, Vancouver Island, 1885. (Fletcher.) Abundant along the Cowichan River and at Nanaimo, Vancouver Island; also at Agassiz, B.C. (Macoun.)

248. SYMPHORICARPUS.(3130.) **S. mollis**, Nutt.; Torr. & Gray, Fl. II., 4.

Quite common on dry, gravelly hills at Goldstream and Nanaimo, Vancouver Island, 1887; also on gravel at Yale and Agassiz, B.C., 1889. (Macoun.)

258. VALERIANELLA. Tourn.

The above generic name is substituted for *Plectritis*, Part II., 205, & III., 501.

(3131.) **V. anomala**, Gray, Proceed. Amer. Acad., XIX., 83.

On gravelly slopes near Nanaimo, Vancouver, 1887. (Macoun.)

262. EUPATORIUM.

(959.) **E. purpureum**, Linn.; Gray, Man., ed. VI., 239. (1890.)

The type of this species has been collected both at Hamilton and London, Ont., by T. J. Burgess, M.D. It is probable that the spotted stem is only a trivial variation.

267. GRINDELIA.

(3132.) **G. nana**, Nutt.; Gray, Synop., Fl. II., 119.

In dry open woods at Qualicum, Vancouver Island, 1887. (*Macoun.*)

Var. **discoidea**, Gray, Synop. Fl. II., 119.

A rayless state of the species gathered on the dry mountain slopes at Goldstream, Vancouver Island, 1887. (*Macoun.*)

Other specimens were collected that are doubtfully referred to *G. integrifolia*. It is quite evident that we have two species on the coast of Vancouver Island that have been included in Gray's Synoptical Flora in the above mentioned species. In one series all the forms have entire leaves; but they vary much in size, and are from glabrous to tomentose.

Another series, with serrate leaves, stout stems and almost smooth in every part, is also included.

779. BOLTONIA, L'Her.

(3033.) **B. asteroides**, L'Her.; Gray, Synop. Fl. II., 166.

In moist places, Souris Co., Man., 1889; apparently very rare. (*T. Walker.*)

(3034.) **B. latisquama**, Gray, var. **occidentalis**, Gray, Synop. Fl. II., 166.

Rich, damp soil, 15 miles west of Winnipeg, Man., 1886. (*Fletcher.*)

275. ASTER.

(1022.) **A. radulinus**, Gray; Macoun, Cat. II., 220.

On the summit of Mount Finlayson, and at Horne Lake, Vancouver Island, 1887. (*Macoun.*) The specimens referred to this species in Part II., 220, belong to *A. conspicuus*.

- (1039.) **A. campestris**, Nutt.; Macoun, Cat. II., 224.

Guichenon Creek, Nicola Valley, B.C., 1888. (*Dawson*.)

- (1890.)
(1046.) **A. Novi-Belgii**, Linn., var. **litoreus**, Gray, Synop. Fl. II., 189.

Salt marsh, and along the bridge that crosses it, near Shaw's Hotel, Brackley Point, Prince Edward Island, 1888. (*Macoun*.)

- (3135.) **A. patulus**, Lam.; Gray, Man., ed. VI., 262.

New Brunswick. (*Gray, Man.*) We have never seen this species, and would be glad if New Brunswick botanists could detect it.

- (2171.) **A. Tradescanti**, Linn.; Macoun, Cat. III., 545.

This species differs from *A. paniculatus* in having its leaves (chiefly) linear and tapering to a long slender point. Probably common throughout Ontario, but confounded with *A. paniculatus*. Quite common at Hull, Que., and Casselman, 29 miles from Ottawa. (*Macoun*.) Not uncommon at Ottawa. (*W. Scott*.)

- (2173.) **A. occidentalis**, Nutt.; Macoun, Cat. III., 546.

In various forms and very abundant along lakes and streams in all parts (visited) of Vancouver Island; also at Shuswap Lake, B.C. (*Macoun*.)

- (1049.) **A. puniceus**, Linn., var. **lucidulus**, Gray, Synop. Fl. II., 195.

Rivière du Loup, Q. Aug., 1889. (*St. Cyr*.)

Var. **laevicaulis**, Gray, Synop., Fl. II., 195.

References under *A. puniceus*, var. *firmus*, Part II., 226, belong here.

- (1053.) **A. peregrinus**, Pursh; Macoun, Cat. II., 226.

In crevices of rocks at the summit of Mount Arrowsmith, Vancouver Island, 1887; alt. 5900 feet. (*Macoun*.)

- (1054.) **A. foliaceus**, Lindl., var. **Eatoni**, Gray, Synop. Fl. II., 194.

Not uncommon on King's Farm at Cedar Hill, near Victoria, Vancouver Island, 1887. (*Macoun*.)

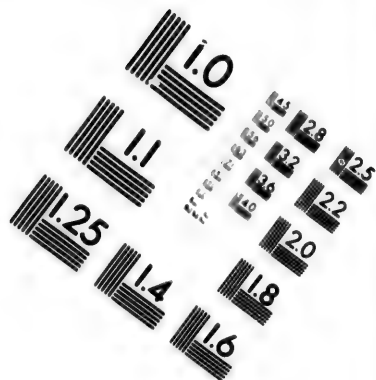
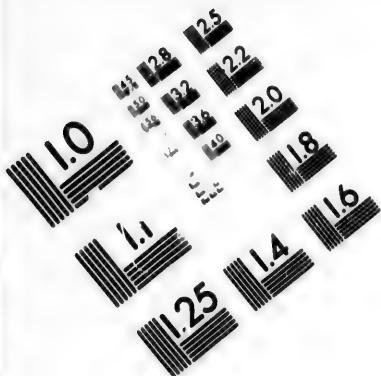
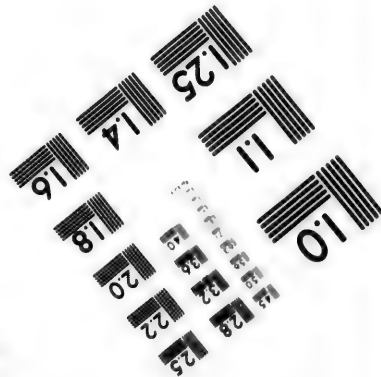
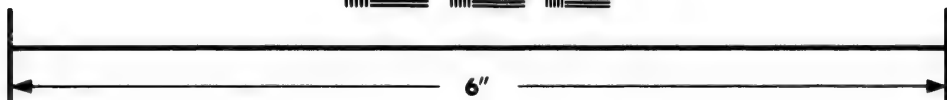
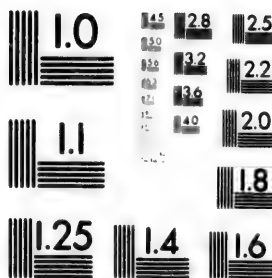


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Var. **pubescens**, Gray, l.c.

Salt marshes, along Barclay Sound, amongst the islands near Cape Beale, Vancouver Island, 1887. (*Macoun*.)

(1067.) **A. subulatus**, Michx., Fl. II., 111.

In salt marshes along the outer sands of Brackley Point, Prince Edward Island, 1888. (*Macoun*). In Part II., 229, under this number I placed a specimen collected along the coast of Lake Huron, but it is more likely a form of *A. paniculatus*.

276. ERIGERON.

(2177.) **E. flagellaris**, Gray; *Macoun*, Cat. III., 548.

Better specimens have been collected at Spence's Bridge, B.C., by Mr. James Fletcher, since the publication of Part III., and competent authorities have referred them to this species.

780. PSILOCARPHUS, Nutt.

(3136.) **P. Oreganus**, Nutt., var. **elatior**, Gray, Synop. Fl. II., 228.

Quite common in ditches that dry up in summer, at Cloverdale and Cedar Hill, near Victoria, Vancouver Island, 1887. (*Macoun*.)

(3137.) **P. tenellus**, Nutt.; Gray, Synop. Fl. II., 228.

Abundant in ditches at Cloverdale, Vancouver Island, 1887. (*Macoun*.)

295. BIDENS.

(3138.) **B. bullata**, Linn.?

Along the Somas River between Alberni and Sprout Lake, on the west side of Vancouver Island, 1887. Doubtfully referred here by Dr. Watson. (*Macoun*.)

781. HELIANTHELLA, Torr. & Gray.

(3139.) **H. Douglasii**, Torr. & Gray, Fl. II., 334.

Mountains between Nicola Valley and Niacomen, B.C., 1888. (*Dawson*.) Abundant on the mountains between the Nicola River and the Thompson, south of Spence's Bridge, B.C., 1889. (*Macoun*.) Mountains north-west of Spence's Bridge. (*J. M. Macoun*.)

311. ARTEMISIA.

(3040.) *A. ANNUA*, Linn.; Gray, Synop. Fl. II., 370.

Introduced at London, Ont., and inclined to spread. (*Burgess.*)
Vacant lots, West Toronto, Ont. (*Macoun.*)

(1192.) *A. glauca*, Pall.; Macoun, Cat. II., 255.

On the open prairie, Souris Co., Man., 1889. (*T. Walker.*)

312. LUINA.

(1212.) *L. hypoleuca*, Benth.; Macoun, Cat. II., 259.

Very abundant in crevices of rock on Mount Mark, altitude 2000 feet; also on the sea-cliffs of the Alberni Canal, west side of Vancouver Island, 1887. (*Macoun.*) Crevices of water-worn rocks in a canyon of the Kokesaila River, about 50 miles from Victoria on the Nanaimo Railway, Vancouver Island. (*Anderson.*)

318. SENECIO.

(1230.) *S. SYLVATICUS*, Linn.; Macoun, Cat. II., 263.

Waste places on Shaw's Farm, Brackley Point, Prince Edward Island, 1888; cultivated ground, Burrard Inlet, at Hastings, B.C., 1889. (*Macoun.*)

(1237.) *S. aureus*, Linn., var. *subnudus*, Gray, Synop. Fl. II., 391.

Western summit of the North Kootanie Pass, Rocky Mountains, 1883. (*Dawson.*)

319. CACALIA.

(1249.) *C. tuberosa*, Nutt.; Macoun, Cat. II., 268.

Plentiful on the banks of the Maitland River, near Clinton, Ont. (*J. Dearness.*)

320. TETRADYMIA.

(1250.) *T. canescens*, DC.; Macoun, Cat. II., 268.

On rocky hillsides, Kamloops, B.C. (*Prof. Fowler.*) Amongst rocks to the west of Kamloops, on both sides of the Thompson River, B.C., 1889. (*Macoun.*) On the North Thompson, 20 miles north of Kamloops, 1889. (*J. M. Macoun.*)

782. SILYBUM, Gærtn. (MILK THISTLE.)

(3141.) *S. MARIANUM*, Gærtn. ; Gray, Synop. Fl. II., 405.

Gosnell's Cove, near Kingston, Ont. (*T. Walker.*) Along the seashore at Oak Bay, Victoria, and at Nanaimo, Vancouver Island. (*Macoun.*) Escaped from gardens.

326. CENTAUREA.

(3142.) *C. CALCITRAPA*, Linn. ; Gray, Synop. Fl. II., 406. (Star Thistle.)

Introduced in ballast at Nanaimo, Vancouver Island, 1887. (*Macoun.*)

(3143.) *C. MELITENSIS*, Linn. ; Gray, Synop. Fl. II., 406.

Introduced. On dry knolls and rocky ledges at Esquimaux; also on ballast heaps at Nanaimo, Vancouver Island, 1887. (*Macoun.*)

(3144.) *C. JACEA*, Linn. ; Gray, Synop. Fl. II., 407.

In meadows at Cedar Hill, Victoria, Vancouver Island, 1887. Introduced. (*Macoun.*)

331. CREPIS.

(3145.) *C. BIENNIS*, Linn. ; Gray, Synop. Fl. II., 430.

Naturalised in fields at Cedar Hill and Somenos, Vancouver Island, 1887. (*Macoun.*)

(1283.) *C. VIRENS*, Linn. ; Macoun, Cat. II., 274.

Cowichan River and in woods at Chemanos, Vancouver Island, 1887. (*Macoun.*)

332. HIERACIUM.

(2188.) *H. AURANTIACUM*, Linn. ; Macoun, Cat. III., 551.

Hamilton Road, east of London, Ont. (*J. Dearness.*)

(1284.) *H. PILOSELLA*, Linn., var. *PELETERIANUM*, Mer.

Very common along roadsides, covering the backs of the dykes and the borders of the fields in many parts of Prince Edward Island. Completely naturalized. (*Macoun.*)

(1293.) **H. paniculatum**, Linn.; Macoun, Cat. II., 276.

In woods, western Ontario. (*J. Dearness.*)

(3146.) **H.** — ?

A tall, coarse plant, with the general appearance of *Crepis*, growing in clumps. The whole stem is more or less covered with dark hairs, which increase so much on the peduncles and bracts as to make them very dark colored. Leaves with only occasional teeth, rough, with hispid hairs, which are more numerous on the under side, mid-rib broad and white; radical leaves nearly a foot long, tapering into the petiole. Naturalized in meadows at Cedar Hill, Victoria, Vancouver Island, 1887. (*Macoun.*)

(3147.) **H. cynoglossoides**, Arvet.; Gray, Synop. Fl. II., 428.

A tall species over three feet high, quite smooth and glaucous, except a few bulbous hairs at the base; leaves entire, lanceolate, not clasping; panicle like *Crepis virens*; involucre almost black, covered with appressed glandular hairs. Collected 40 miles up the North Thompson, beyond the settlements extending from Kamloops, B.C., June, 1889. (*J. M. Macoun.*) Dr. Britton suggests the above name, but the specimen in our herbarium from Howell is unlike this.

346. CAMPANULA.

(3148.) **C. aurita**, Greene, Pittoniana, I., Part V., 221, 1888.

"Root perennial; stems several, a span high, erect, slender, leafy, one-flowered; the whole plant pale and minutely scabrous; leaves an inch long, oblong, lanceolate, acute, sessile by a narrow base, entire or with a few coarse teeth; segments of the calyx lanceolate, each with a pair of erect lobes or teeth at or near the base; corolla violet, $\frac{3}{4}$ inch long, cleft to some distance below the middle, the segments lanceolate, widely spreading."

A well-marked and interesting species obtained on the table-lands of the Yukon River, Alaska, Latitude 63°, late in August, 1881, by Mr. Octavius S. Bates. (*Greene.*)

(1344.) **C. rotundifolia**, Linn., var. **arctica**, Lange.; Macoun, Cat. III., 560.

Greenland, Lat. 71°, 1888. (*Hanson.*) Little Charlton Island, James Bay, July, 1887. (*J. M. Macoun.*) All the northern specimens

are distinguished by having reflexed, white hairs on the lower part of the stem.

Var. **Alaskana**, Gray, Synop. Fl. I., 395.

Mount Mark, near Qualicum, Vancouver Island, 1887. Alt. 2500 ft. (*Macoun.*)

Var. **hirsuta**.

A slender, narrow-leaved variety, with the lower part of stem covered with stiff reflexed hairs. Flowers 1-5, smaller than in the species. Shores of Horne Lake, near Qualicum, Vancouver Island, 1887. (*Macoun.*)

347. HETEROCODON.

(1348.) **H. rariflorum**, Nutt.; Macoun, Cat. II., 289.

Rather common on the oak pasture lands at Cloverdale and Cedar Hill, near Victoria, Vancouver Island, 1887. (*Macoun.*)

349. VACCINIUM.

(1356.) **V. uliginosum**, Linn., var. **mucronatum**, Herter; Macoun, Cat. II., 291.

Crevices of rocks, summit of Mount Arrowsmith, Vancouver Island, alt. 5700 feet, July, 1887. (*Macoun.*)

(3149.) **V. occidentale**, Gray, Synop. Fl. I., 23.

Amongst rocks on the slopes of Mount Mark, alt. 2500 feet, near Qualicum, Vancouver Island, July, 1887. (*Macoun.*)

350. OXYCOCCUS.

(1365.) **O. vulgaris**, var. **intermedium**, Gray, Synop. Fl. I., 396.

Along the swampy margin of Langford Lake, near Goldstream, Vancouver Island, 1887. (*Macoun.*)

353. ARCTOSTAPHYLOS.

(1371.) **A. tomentosa**, Dougl.; Macoun, Cat. II., 295.

Growing in large bushes on the summit of Mount Erskine, altitude 1200 feet, Salt Spring Island, Gulf of Georgia; also on Mount Finlay-

son and other mountains at Goldstream; and on the ridge at the "Old Mine," near the head of Chase River, and on Mount Benson. Nanaimo, Vancouver Island, 1887. (*Macoun.*)

354. CAULTHERIA.

(1373.) *C. ovatifolia*, Gray; Macoun, Cat. II., 295.

Cascade Mountains, British Columbia. (*Gray.*) In alpine woods on Mount Arrowsmith, Vancouver Island, alt. 4500 feet, 1887; also at Sicamous in the Gold Range, B.C., 1889. (*Macoun.*)

363. LEDUM.

(1397.) *L. glandulosum*, Nutt.; Macoun, Cat. II., 301 & III., 562.

Plateau north of Tranquille River, alt. 5000 feet; plateau north of Nicola River, alt. 6000 feet, B.C., 1889. (*Dawson.*)

366. CLADOTHAMNUS.

(1408.) *C. pyrolæiflorus*, Bong.; Macoun, Cat. II., 303.

Mountain near Sumas Lake, 1884. (*Bowman.*) Lake Karmutzen, Vancouver Island, 1885. (*Dawson.*) Wooded slopes, Mount Arrowsmith, Vancouver Island, alt. 5500 feet, 1887. (*Macoun.*)

368. MONESES.

(1416.) *M. grandiflora*, Salisb., Gray, Man., ed. VI., 323.

References under *M. uniflora*, Part II., 306, belong here.

369. CHIMAPHILA.

(1418.) *C. Menziesii*, Spreng.; Macoun, Cat. II., 306.

Shady woods along the Little Qualicum River, and common on the lower slopes of Mount Arrowsmith, Vancouver Island, 1887. (*Macoun.*)

(1419.) *C. maculata*, Pursh; Macoun, Cat. II., 306.

In woods at Plover Mills, Ont. (*R. Elliott.*)

371. ALLOTROPA.

(1421.) *A. virgata*, Torr. & Gray; Macoun, Cat. II., 307.

Quite common in gravelly soil everywhere around Goldstream and in woods at Nanaimo, Vancouver Island, 1887. (*Macoun.*)

373. HIPOPITYS.

- (3150.) **H. fimbriata**, Gray, *Proceed. Amer. Acad.*, VIII., 629.

Quite common in coniferous woods along the Little Qualicum River and on the slopes of mounts Mark and Arrowsmith, Vancouver Island, 1887. (*Macoun.*)

377. PRIMULA.

- (1430.) **P. Sibirica**, Jacq.; *Macoun, Cat. II.*, 310.

Sea shore below high-water mark, west coast of Hudson Bay, Aug., 1886. (*J. M. Macoun.*)

- (3151.) **P. Egaliksensis**, Hornem.; Gray, *Synop. Fl. I.*, 399.

Shore of Charlton Island, James Bay, July, 1887. (*J. M. Macoun.*)

380. DODECATHEON.

- (3152.) **D. frigidum**, Cham. & Schlecht.; Gray, *Bot. Gaz.*, XI., 233.

D. Meadia, Linn., var. *frigidum*, *Macoun, Cat. II.*, 312.

Crevice of rocks, summit of Mount Arrowsmith, alt. 5700 feet, Vancouver Island, 1887. (*Macoun.*)

- (3153.) **D. Hendersoni**, Gray, *Bot. Gaz.*, XI., 233.

D. Meadia, Linn., var. *macrocarpum*, *Macoun, Cat. II.*, 312.

References credited, in Part II., to *Dawson, Hill, Fletcher* and *Macoun*, belong here.

- (3154.) **D. Jeffreyi**, Moore; Gray, *Bot. Gaz.*, XI., 232.

D. Meadia, Linn., var. *lanceifolium*, *Macoun, Cat. II.*, 312.

On an island in the Fraser at Kanaka Bar, B.C. (*Hill.*) Abundant on mountains at Lytton, and Spence's Bridge, B.C., 1889. (*Macoun.*)

386. CENTUNCULUS.

- (1453.) **C. minimus**, Linn.; *Macoun, Cat. II.*, 315.

In boggy places, at Mount Stewart and Brackley Point, Prince Edward Island; in a pond on the Indian Reservation at Kamloops, B.C.; quite common at Sproat Lake and Alberni, on the west coast of Vancouver Island. (*Macoun.*)

783. VINCA, Linn. (PERIWINKLE.)

(3155.) *V. minor*, Linn.; Hooker, Student's Flora, 268.

Escaped from gardens to roadsides at Kingston, Ont. (*T. Walker.*)

391. ASCLEPIAS.

(1466.) *A. speciosa*, Torr.; Macoun, Cat., II., 319.

Very common in the valley of the Thompson River, B.C., from Shuswap Lake to Lytton, on gravel benches and amongst sand, 1889. (*Macoun.*)

394. CENTIANA.

(1488.) *C. glauca*, Pall.; Macoun, Cat., II., 323.

Quite common on the summit of the Gold Range, north of Griffin Lake, B.C., altitude 7000 feet, 1889. (*Macoun.*)

(1492.) *C. sceptrum*, Griseb.; Macoun, Cat., II., 323.

In Westwood's swamp at the base of Mount Benson and in small swamps at Departure Bay, Nanaimo, and at Sproat Lake, Alberni, Vancouver Island; also on Lulu Island at the mouth of the Fraser River, B.C., 1889. (*Macoun.*)

(1499.) *C. linearis*, Frœl., var. *latifolia*, Gray, Proceed. Amer. Acad., XIV., 309.

This variety differs from the var. *lanceolata*, Part II., 325, in having broad leaves, less tapering at the base and being more like a form of *G. alba* than *G. linearis*. Ten or twelve miles north of St. Stephen, Charlotte Co., N.B. (*Vroom.*) Kaministiquia River at Fort William, west of Lake Superior, 1889. (*Dr. Britton.*) The references to *G. alba* in Part II., 324, all, or nearly all, belong here. In Gray's Man., ed. VI., 351, the flowers are said to be blue. None of our specimens are that color, and the type of the variety was not blue.

Var. *lanceolata*, Gray; Macoun, Cat., II., 325.

Along Rupert River, between Lake Mistassini and James Bay, N.E.T., 1885. (*J. M. Macoun.*)

784. ERYTHRÆA, Richard. (CENTUARY.)

(3156.) *E. CENTAURIUM*, Pers.; Gray, Man, ed. VI., 347. (1890.)

Sandy wastes on Sable Island off the coast of Nova Scotia. Collected July, 1870. (*Mrs. Almond.*)

403. COLLOMIA.

(3157.) *C. grandiflora*, Dougl.; Gray, Synop. Fl. I., 135.

On grassy banks at Port Moody, B.C., 1885. (*A. J. Hill.*) Abundant in cultivated fields at Cedar Hill, near Victoria, Vancouver Island, 1887. (*Macoun.*)

(1521.) *C. gracilis*, Dougl.; Macoun, Cat. II., 329.

On gravel banks, Coldwater River, and mountains south of Tulameen River; altitude 6000 feet, B.C. (*Dawson.*) Gravel banks along the Fraser and Thompson rivers from Yale to Kamloops, B.C.; common on dry, rocky or gravelly soil at Goldstream, Nanaimo and Qualicum, Vancouver Island. (*Macoun.*) Lytton, B.C. (*Fletcher.*)

(1522.) *C. heterophylla*, Hook.; Macoun, Cat. II., 329.

Very common on open slopes on all the mountains at Goldstream, and along the Nanaimo Railway, at many points, to Nanaimo, Vancouver Island; rocky hills at Yale, B.C., 1889. (*Macoun.*)

404. CILIA.

(1523.) *C. linifolia*, var. *pharnaceoides*, Gray; Macoun, Cat. II., 329.

Twenty miles up the North Thompson. (*J. M. Macoun.*) On hard baked earth, where water had stood in spring, in low spots, on the north side of the Thompson River, at Kamloops, B.C., 1889. (*Macoun.*)

(1527.) *C. aggregata*, Spreng.; Macoun, Cat. II., 330.

Five miles south of Allison's, Similkameen, B.C., Aug. 1888. (*Dawson.*) Amongst gravel at Penticten, at the southern end of Lake Okanagan, B.C., 1889. (*Macoun.*)

(3158.) *G. coronopifolia*, Pers.; Gray, Synop. Fl. I., 145. (Standing Cypress.)

A garden escape. On a gravelly knoll by a roadside near Port Dover, Norfolk Co., Ont., Aug. 1888. (*A. W. Henshaw.*) There is no doubt but this is a garden escape, as it is often cultivated.

(1529.) *G. CAPITATA*, Dougl.; Macoun, Cat. II., 330.

South of Shawnigan Lake, along the Nanaimo Railway, Vancouver Island; gravelly slope at Sicamous, B.C., 1889. (*Macoun.*)

(3159.) *G. ACHILLEÆFOLIA*, Benth.; Gray, Synop. I., 147.

On the Nanaimo Railway, near Shawnigan Lake, Vancouver Island, 1887. (*Macoun.*) It is probable that both the above species have been introduced with grain from Oregon.

406. HYDROPHYLLUM.

(3160.) *H. occidentale*, Gray, var. *Fendleri*, Gray, Synop. Fl. I., 154.

Grassy slopes, north-west of Spence's Bridge, altitude 3500 feet, B.C., 1889. (*J. M. Macoun.*)

(1535.) *H. capitatum*, Dougl.; Macoun, Cat. II., 331.

On mountains north-west of Spence's Bridge, B.C. (*J. M. Macoun.*)

(1536.) *H. Virginicum*, Linn.; Macoun, Cat., II., 331, & III., 567.

Not uncommon in the valley of Goldstream, near Victoria, Vancouver Island, between the hotel and the sea, 1887. (*Macoun.*)

407. NEMOPHILA.

(3161.) *N. Menziesii*, Hook. & Arn.; Gray, Synop. Fl. I., 156.

Abundant on gravel on Cedar Hill and Mount Tolmie, near Victoria, Vancouver Island, 1887. (*Macoun.*)

410. ROMANZOFFIA.

(1546.) *R. Sitchensis*, Bong.; Macoun, Cat. II., 334.

On stones in the stream that flows from Mount Arrowsmith into Cameron Lake, Vancouver Island, about three miles from the lake, July, 1887. (*Macoun.*)

412. PECTOCARYA.

- (1548.) **P. penicillata**, A. DC.; Macoun, Cat., II., 334.

Quite common in dry soil at Spence's Bridge, B.C., 1889. (*Macoun.*)

413. CYNOCLOSSUM.

- (2195.) **C. occidentale**, Gray; Macoun, Cat., III., 567.

In a piece of thick, damp, woods at Vernon, B.C., 1889. (*Macoun.*)

414. ECHINOSPERMUM.

- (3162.) **E. hispidum**, Gray, Synop. Fl. I., 422.

On damp spots along the railway at Spence's Bridge, B.C. (*Fletcher, Macoun.*)

We follow Dr. Gray in the Supplement to his Synoptical Flora, Vol. II., Part I., 422, in changing the genus *Eritrichium*, Schrad., into the following genera:—

785. OMPHALODES, Tourn.

- (1558.) **O. nana**, Gray, Proceed. Amer. Acad., XX., 262.

Eritrichium nanum, var. *aretioides*, Herder; Macoun, Cat. II., 336.

The varieties are included in the species by Dr. Gray.

786. KRYNITZKIA, Fisch. & Meyer.

- (1559.) **K. plebeia**, Gray, Proceed. Amer. Acad., XX., 266.

Eritrichium plebeium, A. DC.; Macoun, Cat. II., 337.

- (1560.) **K. Californica**, Gray, Proceed. Amer. Acad., XX., 266.

Eritrichium Californicum, DC.; Macoun, Cat. II., 337.

Along the Somas River, Alberni, Vancouver Island, 1887. (*Macoun.*)

- (1561.) **K. Chorisiana**, Gray, Proceed. Amer. Acad., XX., 267.

Eritrichium Chorisianum, DC.; Macoun, Cat. II., 337.

All the specimens collected around Victoria by *Hill, Fletcher* and *Macoun* are of this species. The reference in Part III., 568, is to the *Lytton* specimens.

- (1562.) **K. Scouleri**, Gray, *Proced. Amer. Acad.*, XX., 267.

Eritrichium fulvum, A. DC.; Macoun, *Cat. II.*, 337.

E. Scouleri, A. DC.; Macoun, *Cat. III.*, 568.

Vicinity of Victoria, Vancouver Island, 1885. (*Fletcher*.) Wet spots,
"Half-way House," Nanaimo, Vancouver Island. 1887. (*Macoun*.)

- (1564.) **K. lolocarpa**, Fisch. & Meyer; Gray, *Proced. Amer. Acad.*, XX., 270.

Eritrichium lolocarpum, Watson; Macoun, *Cat. II.*, 337.

Little Shuswap Lake, B.C. 1889. (*Macoun*.)

- (1565.) **K. crassiseptala**, Gray, *Proced. Amer. Acad.*, XX., 268.

Eritrichium crassiseptalum, Torr. & Gray; Macoun, *Cat. II.*, 337.

This has not been collected of late years.

- (2198.) **K. circumscissa**, Gray, *Proced. Amer. Acad.*, XX., 275.

Eritrichium circumscissum, Gray; Macoun, *Cat. III.*, 568.

On very dry slopes at Spence's Bridge, B.C. 1889. (*Macoun*.)

- (1566.) **K. glomerata**, Gray, *Proced. Amer. Acad.*, XX., 279.

Eritrichium glomeratum, DC.; Macoun, *Cat. II.*, 337.

This only includes the type and synonyms. The prairie specimens are chiefly of this species.

- (3163.) **K. sericea**, Gray, *Proced. Amer. Acad.*, XX., 279.

Eritrichium glomeratum, DC., var. *humile*, Gray; Macoun, *Cat. II.*, 338.

Specimens chiefly from the foot-hills of the Rocky Mountains, belong here.

- (1567.) **K. leucophæa**, Gray, *Proced. Amer. Acad.*, XX., 279.

Eritrichium leucophæum, A. DC.; Macoun, *Cat. II.*, 338.

Not yet found by Canadian collectors.

787. **PLAGIOBOTHRYS**, Fisch. & Meyer.

- (1563.) **P. tenellus**, Gray, *Proced. Amer. Acad.*, XX., 281.

Eritrichium tenellum, Gray; Macoun, *Cat. II.*, 337, & *III.*, 568.

Mount Tolmie, near Victoria, Vancouver Island. 1887. (*Macoun*.)

(3164.) **P. Torreyi**, Gray, *Proced. Amer. Acad.*, XX., 281.

Eritrichium Torreyi, Gray; Macoun, *Cat. III.*, 568.

The specimens from Lytton, referred here, are correct. Abundant at Spence's Bridge, B.C. 1889. (*Macoun.*)

418. MYOSOTIS.

(1577.) **M. PALUSTRIS**, With.; Macoun, *Cat. II.*, 340.

In wet places along the Fraser River at Lulu Island, B.C. 1889. (*Macoun.*)

428. SOLANUM.

(1608.) **S. NIGRUM**, Linn., var. **VILLOSUM**, Mill.; Gray, *Synop. Fl. I.*, 228.

On ballast heaps at Nanaimo, Vancouver Island, 1887; waste places around Kamloops, B.C. 1889. (*Macoun.*)

Var. **nodiflorum**, Gray, *Synop. Fl. I.*, 228.

In wheat fields at Agassiz, B.C. 1889. Possibly introduced. (*Macoun.*)

439. COLLINSIA.

(1635.) **C. parviflora**, Dougl.; Macoun, *Cat. II.*, 453, & *III.*, 570.

Guichon Creek, B.C.; Glenora, Stikine River, B.C. 1887. (*Dawson.*)
Agassiz, B.C., 1889; also on Cedar Hill, Vancouver Island. (*Macoun.*)

440. SCROPHULARIA.

(1636.) **S. nodosa**, Linn., var. **Marilandica**, Gray, *Man.*, ed. VI., 380; Macoun, *Cat. II.*, 354, in part.

In the edition of the manual just cited, only one form of this species is described. As we have two forms of it, that were recognized and described by Pursh, *Fl. II.*, 419, I now reproduce them, and append to the description of Pursh that of Mr. J. Dearness, Public School Inspector of London, Ont., who first drew my attention to them, and who has grown them side by side for three years.

Leaves cordate rounded, at the base acutely serrate; petioles ciliate at the base; panicle fasciculate loose-flowered; flowers, greenish brown. The whole plant often four feet high. In flower from June to August. (*Pursh.*) Leaves ovate to ovate-lanceolate above; broad at base cordate

to round, about equally deeply serrate. Flowers, lurid olive to brown. Usually solitary. Less than a foot high on 21st May, 1889. Time of flowering, August, September, October. (*Dearness.*) Damp river bank at London, Ont. (*Burgess, Millman, Dearness.*)

(3165.) **S. lanceolata**, Pursh, Fl. II., 419.

Leaves lanceolate, unequally serrate, the serratures acuminate, acute at the base; petioles naked; panicle corymbose-fasciculate. Flowers, greenish yellow. In flower from August to September. (*Pursh.*) Leaves lanceolate from lowest to highest; deeply and unequally serrate or toothed; acute at the base. Flowers green, tinged slightly with yellow. In flower June and July. Six or eight strong stalks from a horizontally spreading root. Four feet high on 21st May, 1889. (*Dearness.*) Vicinity of Belleville, Ont. (*Macoun.*) Biddulph Township, Middlesex Co., Ont. (*Dearness.*)

(3166.) **S. Californica**, Cham.; Gray, Synop. Fl. I., 258.

The specimens referred here have the stems puberulent, with appressed hairs, which pass in the upper part of the stem and inflorescence into stalked glands. The leaves, however, are more like *S. nodosa*, var. *Marilandica*, not being deeply serrate. China Creek, Alberni Canal, Vancouver Island, 1887; in the valley of Eagle River at Griffin Lake, B.C. 1889. (*Macoun.*)

443. MIMULUS.

(1658.) **M. moschatus**, Dougl., var. **sessilifolius**, Gray, Suppl. Synop. Fl. I., 446.

In water along China Creek, Alberni Canal, Vancouver Island, Aug. 1887. (*Macoun.*)

444. CRATIOLA.

(1659.) **C. ebracteata**, Benth.; Macoun, Cat. II., 358.

Abundant in a field near the Railway Station at Nanaimo, and occasionally in wet places at Wellington Mines, Vancouver Island; in wet spots by the saw-mill at Kamloops, B.C. 1889. (*Macoun.*)

446. LIMOSELLA.

(1663.) **L. aquatica**, Linn., var. **tenuifolia**, Hoffm.; Macoun, Cat. II., 359.

Quite common in a salt marsh at Brackley Point, Prince Edward Island. 1888. (*Macoun.*) Sable Island, 1870. (*Mrs. Almond.*)

445. ILYSANTHES.

(1667.) *I. riparia*, Raf. ; Gray, Man., ed. VI., 385.

I. gratioloides, Benth. ; Macoun, Cat. II., 359.

Leamy's Lake, near Hull, Que. 1889. (*Macoun.*)

451. CASTILLEIA.

(3167.) *C. breviflora*, Gray, Synop. Fl. I., 299.

In clumps, on dry hills, north of Kamloops, B.C., 1889. (*Macoun.*) On dry ground, Lower Arrow Lake, B.C., 1889. (*Dawson.*) The specimens gathered at Osoyoos Lake, B.C., and referred to *Orthocarpus tenuifolius*, Part II., 366, belong here.

452. ORTHOCARPUS.

(3168.) *O. castilleioides*, Benth. ; Gray, Synop. Fl. I., 300.

Quite common in wet meadows near the seashore, three miles below Alberni, on the Alberni Canal, Vancouver Island. 1887. (*Macoun.*)

460. BOSCHNIAKIA.

(1727.) *B. Hookeri*, Walp. ; Macoun, Cat. II., 374 & III., 578.

Abundant on the roots of *Gaultheria Shallon*, near the base of Mount Benson, Nanaimo ; also in woods along the Little Qualicum River, Vancouver Island, 1887. The greater number of the specimens were bright purple, but a few were quite pale. (*Macoun.*)

462. UTRICULARIA.

(1732.) *U. minor*, Linn. ; Macoun, Cat. II., 375.

In a marsh at Mount Stewart, Prince Edward Island. 1888. (*Macoun.*)

(1733.) *U. gibba*, Linn. ; Macoun, Cat. II., 375.

In a muddy bay off a large pond at Westminster, near London, Ont. (*Dearness.*)

463. PINQUICULA.

(1737.) **P. villosa**, Linn.; Macoun, Cat. II., 376.

Frances River, Lat. 61°, N.W.T. 1887. (*Dawson.*)

468. VERBENA.

(1748.) **V. bracteosa**, Michx.; Macoun, Cat. II., 379 & III., 574.

On the shore of the river east of Point Edward, Ont., 1889. (*Dearness.*)
Quite common at Spence's Bridge and Kamloops, B.C. 1889. (*Macoun.*)

470. TEUCRIUM.

(2203.) **T. occidentale**, Gray; Macoun, Cat., III., 574.

Low ground, London, Ont. 1880. (*Burgess.*) Amongst gravel
along the Thompson River at Spence's Bridge, B.C. 1889. (*Macoun.*)

(3169.) **T. Botrys**, Linn.; Hook., Stud. Fl. 331.

Introduced. Roadside near London, Ont. 1888. (*Dearness.*)

(1750.) **T. Canadense**, Linn.; Macoun, Cat. II., 380.

Sandy woodlands at Point Pelee, Essex Co., Ont. 1886. (*Burgess.*)
The localities mentioned under this No. in Part II., 380, belong partly
to *T. Canadense* and partly to *T. occidentale*. In the absence of speci-
mens, we cannot tell which is meant.

788. ELSHOLTZIA, Willd.

(3170.) **E. cristata**, Willd.

This is a curious exotic labiate, a native of Europe, and belonging
near our genus *Collinsonia*. Found growing in a clearing near a mill
at Notre Dame du Lac, on the shore of Lake Temiscouata, Q. 1887.
There was no doubt but that it was introduced. (*John L. Northrop.*)

476. PYCNANTHEMUM.

(2205.) **P. muticum**, Pers., var. **pilosum**, Gray; Macoun, Cat.,
III., 574.

Very common in old fields, woodlands and along roadsides near
Leamington, Essex Co., Ont. 1886. (*Burgess.*)

475. HYSSOPUS.

(1762.) *H. OFFICINALIS*, Linn.; Macoun, Cat., II., 382.

A white variety is quite common on the roadsides near the St. Lawrence and Ottawa railway station in Ottawa. (*Fletcher Fl. Ott.*)
The purple variety by roadsides in London, Ont. (*Dearness.*)

482. MELISSA.

(1771.) *M. OFFICINALIS*, Linn.; Macoun, Cat., II., 384.

Growing in clumps by roadsides in Clinton, Huron Co., Ont. (*Dearness*)

489. SCUTELLARIA.

(1788.) *S. angustifolia*, Pursh; Macoun, Cat., II., 388.

Moist ground near Victoria, Vancouver Island. 1885. (*Fletcher.*)

789. BALLOTA, Linn. (FETID HOREHOUND.)

(3171.) *B. NIGRA*, Linn. Black Horehound.

Introduced. Growing on roadsides with *Nepeta Cataria* at London, Ont. (*Dearness.*)

494. LAMIUM.

(3172.) *L. MACULATUM*, Linn.; Gray, Man., ed. VI., 421.

Escaped from gardens at London, Ont. (*Dearness.*) Both the white and the purple flowered varieties were found growing wild in the streets of Stratford, Ont. 1886. (*Burgess.*)

(1795.) *L. AMPLEXICAULE*, Linn.; Macoun, Cat. II., 390.

Common in gardens in Toronto and London, Ont. (*Dearness.*)

(1796.) *L. PURPUREUM*, Linn.; Macoun, Cat. II., 390.

Escaped from gardens, London and Wallaceburg, Ont. (*Dearness.*)

497. PLANTAGO.

(1807.) *P. macrocarpa*, Cham. & Schl.; Macoun, Cat. II., 392.

On the portage between Aliburni and Qualicum, Vancouver Island, 1887. (*Macoun.*)

504. **ACNIDA.**

- (1829.) **A. tuberculata**, Moq., var. **subnuda**, Watson; Macoun, Cat. III., 397.

It is probable that part of the localities referred to the species in Part III. belong to this variety, which is very common on the north side of the bridge over Brigham's Creek, leading to Hull Cemetery, near Ottawa. (*Macoun.*)

790. **KOCHIA, Roth.**

- (3173.) **K. scoparia**, Schrad.; Gray, Man., ed. VI., 431.

In waste lots on Sparks street, west of Bank street, Ottawa, 1882. (*Fletcher, Fl., Ott.*)

506. **CHENOPODIUM.**

- (3174.) **C. Fremonti**, Watson, Bot. King's Exp., 287.

Among sand hills at the source of the Qu'Appelle River, Assiniboia, 1879; also on the Indian Reservation, at Kamloops, B.C., 1889. (*Macoun.*) Near Regina, Assiniboia. (*Fletcher.*)

- (1838.) **C. bonus-henricus**, Linn.; Macoun, Cat. III., 400.

By roadsides at Brackley Point, Prince Edward Island, 1888. (*Macoun.*) Streets of Clinton, Huron Co., Ont. 1889. (*Dearness.*)

- (1840.) **C. rubrum**, Linn., var. **humile**, Moquin; Macoun, Cat. III., 400.

On dried up brackish mud, frequent around Kamloops, B.C. 1889. (*Macoun.*)

- (3175.) **C. murale**, Linn.; Gray, Man., ed. VI., 432.

Introduced in ballast at Nanaimo, Vancouver Island, 1887. (*Macoun.*)

507. **ATRIPLEX**

- (1841.) **A. patulum**, Linn.; Macoun, Cat. III., 401.

On ballast heaps at Nanaimo, and on sea beaches at Qualicum, Vancouver Island, 1887; sands, Burrard Inlet, B.C. 1889. (*Macoun.*)

Var. **hastatum**, Gray; Macoun, Cat. III., 401.

Brackish mud at Kamloops, B.C., 1889; common along the Vancouver Island coast at Victoria, Nanaimo, Qualicum and Alberni. 1887. (*Macoun.*)

Var. **littorale**, Gray; Macoun, Cat. III., 401.

On sand at Brackley Point, Prince Edward Island, 1888; Burrard Inlet, at Vancouver City, B.C., 1889; sea beach at Qualicum, Vancouver Island, 1887. (*Macoun.*)

509. CORISPERMUM.

(1851.) **C. hyssopifolium**, Linn.; Macoun, Cat. III., 403.

Quite common at the north end of Spence's Bridge, B.C. 1889. (*Macoun.*)

791. AXYRIS, Linn.

(3176.) **A. AMARANTHOIDES**, Linn.

Roadside, ten miles west of Winnipeg, Man., 1886. (*Fletcher.*) Introduced.

518. POLYCONUM.

(1871.) **P. minimum**, Watson; Macoun, Cat., III., 408.

Quite common on gravel and sand at the outlet of Griffin Lake, B.C., and in the bed of the mountain torrent flowing into the lake at the same place. 1889. (*Macoun.*)

(1875.) **P. coarctatum**, Dougl.; Macoun, Cat., III., 408.

Not uncommon at Goldstream, Cowichan, Nanaimo and Qualicum, Vancouver Island; abundant in the Fraser valley at Yale, Lytton and on the Thompson at Spence's Bridge and Kamloops, B.C., in dry gravel and sand. 1889. (*Macoun.*)

(3177.) **P. Douglasii**, Greene.

On slopes of dry hills at Sicamous, B.C., July 3rd, 1889. (*Macoun.*)

(3178.) **P. intermedium**, Nutt.

In crevices of rocks on the summit of Mount Mark, Vancouver Island, altitude 3300 feet. 1887. (*Macoun.*)

(1878.) **P. lapathifolium**, Linn.; Gray, Man., ed. VI., 440.

P. nodosum, Pers. & *P. incarnatum*, Macoun, Cat. III., 400, in part.

Spikes oblong to linear ($\frac{1}{2}$ -2 in. long), dense, erect, or nearly so. Our herbarium specimens are from Brackley Point, Prince Edward Island; Norton, N.B.; Lake Nepigon, Ont.; Qu'Appelle, and Devil's Lake, Assiniboia; Kicking Horse Lake, Rocky Mountains; Indian Reservation, Kamloops, B.C.; and Cowichan River, Vancouver Island. (*Macoun.*)

Var. **incarnatum**, Watson, Gray, Man., ed. VI., 440.

P. incarnatum, Macoun, Cat., III., 409.

Spikes more slender and elongated (2-4 in. long), nodding. Our herbarium specimens are from Hull near Ottawa; Belleville, Hastings Co., Ont.; Kew Gardens, Toronto; Saskatchewan River; and Port Moody, B.C. (*Macoun.*)

Var. **incanum**, Koch.; Macoun, Cat., III., 410.

Leaves small, obtusish, more or less hoary beneath, with floccose tomentum; spikes short. Our specimens are from Seymour, Northumberland Co., Ont.; Gull Island, Lake Nepigon; Muskeg Island, Lake Winnipeg; Medicine Hat, Assiniboia. (*Macoun.*)

(1880.) **P. Muhlenbergii**, Watson; Gray, Man., ed. VI., 441.

P. Muhlenbergii, Macoun, Cat., III., 410, in part.

Decumbent or sub-erect, scabrous with short appressed hairs. Wet places, London, Ont. (*Burgess.*) On the Indian Reservation, Kamloops, B.C. 1889. (*Macoun.*) The latter specimens are without flowers and much more hairy than those from London.

(3179.) **P. emersum**, Muhl.?

Differs from *P. Muhlenbergii*, in having the leaves much rougher with appressed hairs; lower sheaths and petioles quite smooth and the upper part of the stem and flower spike covered with glandular hairs. Under side of petiole and midrib of leaf quite hairy. Our specimens are from Short Creek and Moose Jaw and Thunder creeks; also Tail Creek and Belly River. This is the common *Polygonum* along all the streams throughout the prairie region.

519. FAGOPYRUM.

- (1900.) **F. TARTARICUM**, Gertn. (India-Wheat.)

Polygonum Tartaricum, Linn.; Macoun, Cat., III., 414.

An occasional escape from cultivation on waste heaps around cities.

521. RUMEX.

- (1905.) **R. PATIENTIA**, Linn.; Macoun, Cat., III., 415.

Not uncommon along Carling's Creek, London, Ont. 1889. (*Dearness.*)

- (1906.) **R. Brittanica**, Linn.; Gray, Man., ed. VI., 438.

R. orbiculatus, Gray; Macoun, Cat., III., 415.

Distinguished from *R. occidentalis*, by the valves being grain-bearing, whereas in that species they are naked.

532. EUPHORBIA.

- (1943.) **E. Preslii**, Guss.; Gray, Man., ed. VI., 453.

E. hypericifolia, Macoun, Cat., III., 427.

We have no Canadian specimens of this species in our herbarium.

- (3180.) **E. ESULA**, Linn.; Gray, Man., ed. VI., 456.

Introduced along the banks of Bayfield River, Huron Co., Ont. 1889. (*Dearness.*)

792. MACLURA, Nutt. (OSAGE ORANGE.)

- (3181.) **M. AURANTIACA**, Nutt.; Gray, Man., ed. VI., 464.

Cultivated for hedges in south-western Ontario. Becoming wild in Essex County. (*Macoun.*)

540. URTICA.

- (1956.) **U. Lyallii**, Watson; Macoun, Cat., III., 430.

Abundant in the valley of the Fraser from Agassiz to the coast; also at Nanaimo, Vancouver Island. (*Macoun.*)

(1957.) **U. holosericea**, Nutt.; Macoun, Cat., III., 431.

The specimens referred here in Part III., 431, belong to *U. Lyallii*. Guichon Creek, Nicola Valley, B.C. (*Dawson*.) In wet places at Vernon at the head of Lake Okanagan, B.C. 1889. (*Macoun*.)

548. MYRICA.

(1970.) **M. Gale**, Linn.; Macoun, Cat., III., 434.

This species is common along lake margins in northern British Columbia; along Burnaby Lake, near New Westminster, and very common on Vancouver Island. (*Macoun*.)

550. ALNUS.

(1983.) **A. rubra**, Bongard; Macoun, Cat., III., 437.

Frances Lake, Lat. 61°, N.W.T. 1887. (*Dawson*.) Along the Thompson River at Spence's Bridge, B.C.; shore of Horne Lake, Vancouver Island. (*Macoun*.)

553. CORYLUS.

(1989.) **C. rostrata**, Ait. var. **Californica**, A.DC., Bot. Calif., II., 101.

Very common at Sicamous and Salmon Arm, Shuswap Lake; and Agassiz, B.C.; common on Vancouver Island at Goldstream. 1887. (*Macoun*.)

554. QUERCUS.

(1992.) **Q. Garryana**, Douglas; Macoun, Cat. III., 440.

Since the publication of Part III., the question has been raised whether R. Brown's *Q. Jacobi* is a good species or not. In August, 1887, I collected fine specimens of the oak on Sir James Douglas's lawn in Victoria, Vancouver Island, upon which Mr. Brown founded his species. Part of these specimens were submitted to Professor Sargent, and by him referred to *Q. Garryana*. I had collected specimens of the oak on other parts of the island, and could see no difference between them, so I fully agreed with Prof. Sargent that Mr. Brown's species could not stand.

In March last (1890), Rev. E. L. Greene, Berkeley, Cal., asked me to send him specimens of the Vancouver Island Oak. I did so; and he

writes that all the specimens sent are *Quercus Jacobi*, R. Brown, and quite distinct from the Oregon *Q. Garryana*. It is therefore probable that the Vancouver Island Oak will become *Q. Jacobi*, instead of *Q. Garryana*.

(1993.) ***Q. stellata***, Wang.; Gray, Man., ed. VI., 475.

Q. obtusiloba, Michx.; Macoun, Cat., III., 440.

We are still doubtful of the occurrence of this tree within our limits.

(1999.) ***Q. coccinea***, Wang., var. ***ambigua***, Gray, Man., ed. VI., 478.

Q. ambigua, Michx.; Pursh Fl. II., 630.

Q. rubra, Macoun, Cat., III., 442, in part.

In the new edition of Gray's Manual this variety is said to extend along the north-eastern borders of Lake Champlain and northward. This being the case, the Nova Scotia, New Brunswick, and most of the Quebec *Q. rubra* becomes this variety. Collectors in these provinces should collect a good series of fruiting specimens to determine this.

555. CASTANEA.

(2002.) ***C. sativa***, Mill., var. ***Americana***, Gray, Man., ed. VI., 479.

References under *C. vulgaris*, var. *Americana*, Macoun, Cat., III., 443, belong here.

557. SALIX.

(2007.) ***S. Brownii***, Bebb.; Bot. Gaz., XIV., 444.

S. arctica, R. Brown, Bot. Ross. Voy., ed. II., 194; Hook., Fl. II., 152; Macoun, Cat. III., 444, in part.

"Omit synonym *S. cordifolia*, Hook. The localities given in Part III. are all correct, excepting 'Kotzebue Sound and Ounalashka (*Rothr., Alaska.*),' which almost certainly belong to *S. arctica*, Pallas (not R. Br.)." (*Bebb.*) South Twin Island, James Bay, 1887; shore of Hudson Bay, Lat. 55°-56°, 1886. (*J. M. Macoun.*) Mountains between Peel River and La Pierre's House, Arctic Circle, 1888. (*McConnell.*)

(2008.) ***S. argyocarpa***, Anders.; Macoun, Cat. III., 445.

"Richardson's locality, 'Fort Franklin, on the Mackenzie,' were better omitted. There is no trace of this species among his collections that I have seen, and no evidence, at least in American herberia, that

it grows anywhere in the North-West. 'Nepigon River, Lake Superior,' I would omit also; the specimens upon which it was given being of very doubtful determination." (Bebb.)

(2009.) **S. Barrattiana**, Hook.; Macoun, Cat. III., 445.

"Omit 'Old Man River and South Kootanie Pass,' and add: 'in all thickets at high elevations, Kicking Horse Lake. (Macoun)'; a rediscovery after the lapse of fifty years of a most remarkable species." (Bebb., Bot. Gaz., XIV., 51.)

(2011.) For **S. Barclayi**, Anders., Macoun, Cat. III., 445, read **S. Barclayi**, Anders.

(2019 & 2038.) **S. phyllioides**, Anders., Sul. Bor.-Amer., 18; Bebb. Bot. Gaz., XIII., 186; Macoun, Cat. III., 453.

S. fulcrata, var. *sub-glauc*a, Anders.; Macoun, Cat. III., 448.

Arctic North America. (Seeman, Richardson.) Point Barrow. (Murdoch, Oldmixon.) Kuskokosin Valley, Alaska. (Weinmann.) Shumagin Islands. (Harrington.) Nushagak. (McKay.)

The localities are all furnished by Mr. Bebb.

(2020.) **S. flavescens**, Nutt., var. **tenuijulis**, Anders.

Very common in many places on Vancouver Island in wet places by lakes and rivers and marshes. Collected at Victoria, Cedar Hill, Gordon Head, Goldstream, Nanaimo, Cameron Lake, Alberni, and Salt Spring Island. 1887. (Macoun.)

Var. **Scouleriana**, Bebb; Macoun, Cat. III., 448.

Stikine River, B.C., above the canyon, 1887. (Dawson.) Lost Lake, Cedar Hill and Cameron Lake, Vancouver Island, 1887; also at Lytton, B.C., 1889. (Macoun.)

(2022.) **S. herbacea**, Linn.; Macoun, Cat. III., 449.

"This species is not known to occur on the west side of the continent, and I would not hesitate to strike out 'Northwest Coast (Nelson).'" (Bebb.) Our Rocky Mountain specimens are all *S. arctica*, var. *petraea*, and are therefore struck out. (Macoun.)

(2023.) **S. Hookeriana**, Barratt; Macoun, Cat. III., 449.

"Strike out the Saskatchewan habitat. We have now the explicit

statement in Dr. Barratt's own handwriting that the type specimens were collected on the Northwest Coast by Dr. Scouler!" (*Bebb.*) Very abundant on Vancouver Island, from Victoria to Nanaimo, 1887; common around Burrard Inlet, and in the Fraser Valley, as far as Agassiz, B.C., 1887. (*Macoun.*) In the Fraser Valley specimens, Mr. Bebb found the capsules tomentose becoming smooth at the base.

(2024.) ***S. humilis***, Marshall; Macoun, Cat., III., 449.

"Omit the Rocky Mountains locality. It is clear outside the known range of the species given on leaves only and doubtless a mistake." (*Bebb.*)

(2025.) ***S. arbusculoides***, Anders., Monog. Sal., 147.

S. humillima, Anders.; Macoun, Cat., III., 449.

S. acutifolia, Hook. Fl. II., 150.

Prince Albert Sound. (*Mieschring.*) Rae River. (*Dr. Rae.*) Saskatchewan to Fort Franklin on the Mackenzie River. (*Hook. Fl.*) Marshes near the Rocky Mountains. (*Drummond.*)

(2026.) ***S. lasiandra***, Benth., var. ***typica***, Bebb.; Macoun, Cat., III., 449.

Abundant in thickets at Cedar Hill and Langford Lake, near Goldstream, Vancouver Island. 1887. (*Macoun.*)

Var. ***lanceifolia***, Bebb.; Macoun, Cat., III., 450.

Quite common in the neighbourhood of Victoria, Vancouver Island. Many of the trees are of large size; abundant at Agassiz and New Westminster, B.C. 1889. (*Macoun.*) Shore of Burrard Inlet at Vancouver City. (*Prof. Fowler.*)

Var. ***Fendleriana***, Bebb.

Shore of Shuswap Lake, B.C., near Scotch Creek, June, 1889. (*Macoun.*)

(2031.) ***S. myrtillofolia***, Anders., Sal. Bor.-Amer., 28.

S. Novae-Angliae, Anders., Sal. Monog., 160, & DC. Prod., 16³, 253, mainly.

S. myrtilloides, Hook. Fl. II., 151, mainly.

This may be considered to include all the forms included in No. 2031, Part III., 452. Throughout the region of the Canadian Lakes

from north of the Lake of the Woods (*R. Bell*) to Great Bear Lake. (*Richardson*.) "Common on the Portage of the Grand Rapid of the Saskatchewan, near Lake Winnipeg." (*Douglas*.) Pie River, Lake Superior; and in swampy spots from Edmonton to the Athabasca River, at Fort Assiniboine. (*Macoun*.) Clearwater River, lat. 57°, N.W.T., 1888. (*J. M. Macoun*.) Along streams in the foot-hills of the Rocky Mountains. (*Drummond*.)

(2034.) ***S. arctica***, Pallas, Fl. Ross 2², 86; Bebb, Bot. Gaz., XIV., 115.

S. Pallasii, Anders., DC. Prod. 16², 285.

S. crassijulis, Trev., ex Traut. Sal. frigid, 308.

S. diplotictya, Traut., Sal. frigid, 307.

This species includes No. 2034 and its varieties, Part III., 452. Alaska and adjacent islands on the tops of high hills; Nulaska. (*Kellogg*, *Harrington*, *Escholtz*.) Shumagin Islands. (*Harrington*.) Nushagak. (*McKay*.) Semidi Islands. (*Dall*.) Doubtless this species will be found on Queen Charlotte Islands.

(2036.) ***S. phlebophylla***, Anders.; Macoun, Cat. III., 452.

"A species of high Arctic distribution in western rather than in eastern British America. The station, 'Eastern summit of North Kootanie Pass, Rocky Mountains,' should be omitted; even Rothrock's localities, south of Behring's Strait, are very doubtful. Much confusion has arisen from Anderson's having at first distributed one of Dr. Lyall's Cascade Mountain Willows as *S. phlebophylla*, the same plant that afterwards served as the type of his *S. tenera*, N. Sp., in reality only a form (by no means rare) of *S. Brownii*." (*Bebb*.)

(2043.) ***S. Richardsoni***, Hooker.; Macoun, Cat. III., 454.

Repulse Bay. (*Parry*.) Crevices in rocks, Nachvak, coast of Labrador. (*R. Bell*.)

Var. ***Macouniana***, Bebb, Bot. Gaz., XIV., 50, Pl. 9.

Leaves orbicular, the earliest obovate, quite entire, less than one inch long and broad, covered when young with floccose hairs, especially on the upper surface, soon smooth, dark green and somewhat shining above, paler and reticulate-veined beneath; aments small for the group, whitish-silky with just a shade of fulvous in the male, scales obtuse, stigmas entire, otherwise as in the type. (*Bebb*.) A small compact bush, 2 to 4 feet high, with just the habit of a garden currant, growing

in peaty soil by a small pond in company with *S. Brownii*. South Twin Island, James Bay, July 17th, 1887. (*J. M. Macoun.*)

(2046.) ***S. speciosa***, Hook. & Arn.; Macoun, Cat. III., 454.

Upper Liard River, N.W.T., Lat. 60°. (*Dawson.*) Fifty miles below Good Hope, Mackenzie River, 1888. (*McConnell.*) "Forks of Dean River, 8 to 12 feet high." (*Dr. Richardson.*)

(3182.) ***S. macrocarpa***, Nutt.

Very common in wet thickets in the district around Victoria, Vancouver Island, 1887. (*Macoun.*)

(3183.) ***S. monticola***, Bebb; Coutler, Man. Rock. Mount. Fl. 336.

"Leaves oblong-lanceolate, the earliest obovate, acute 3 to 6 inches long, 1 to 1½ inches wide, glabrous, rigid and glaucous beneath, or thin and pale beneath, unevenly crenate or serrulate; stipules large, semi-cordate, acute; buds large, ovate and beaked at the tip; aments thick, densely flowered, sessile; males closely so; females with a few broad bracts at base, when in flower about an inch long, lengthening in fruit to 1½ to 2 inches; scales oval, obtuse, clothed with long yellowish-white silky hairs; capsules ovate-conical, glabrous, sessile or nearly so; style elongated; stigmas erect, bifid or entire. A densely caespitose shrub, 8 to 12 feet high, stem 1 to 2 inches in diameter." Old Man River, Rocky Mountains, Aug. 14, 1883. (*Dawson.*) These specimens were referred to *S. Barrattiana* in Part III., 445. A few fragments of what has been considered this species were collected on the Rocky Mountains at Kicking Horse Lake, July, 1885. (*Macoun.*)

(3184.) ***S. commutata***, Bebb., Bot. Gaz., XIII., 110.

"A diffuse alpine shrub of variable stature, commonly 3 to 4 feet in height, in sheltered localities 8 to 10 feet, often much dwarfed by altitude and exposure; leaves broadly oblanceolate or oblong, abruptly pointed, cuspidate, tapering toward the roundish base, at first covered more or less with a dense silky tomentum, downy even when fully grown; older and lower leaves becoming smooth, green both sides (not glaucous beneath), margin entire or (under a lens) minutely glandular-serrulate; leaves of sterile shoots ample, 3 to 4 inches long, varying to cordate-ovate, thinnish in texture; stipules large, ovate, glandular-serrate; aments on stout leafy peduncles, with 4 to 7 ovate or oblanceolate leaves, erect, densely flowered, an inch long; fertile in fruit 2 inches, compact cylindrical; scale thin, pale or brownish, obtuse,

woolly; capsule ovate-conical, glabrous, greenish or rufescent; pedicel pubescent, 2 to 3 times the length of the nectary; style medium, stigmas small, erect, entire." Boggy places on the summit of Mount Queest, Gold Range, B.C. Alt. 6500, July 25, 1889. (*J. M. Macoun.*)

(3185.) **S. conjuncta**, Bebb, Bot. Gaz., XIII., 111.

"Leaves of the flowering branches elliptic or obovate, sub-acute, 1 to $1\frac{1}{2}$ in. long; leaves of the sterile branches ample, 2 to 4 in. long, 1 to 2 in. wide, ovate-lanceolate, cuspidate-acuminate, attenuate or rounded at base; stipules large, ovate, acute; all glabrous or at first thinly overspread on the upper surface with evanescent floccose hairs, at length rigid, scarcely paler or rarely sub-glaucous beneath, young drying black, margins finely and evenly crenate-serrulate; aments borne on stout leafy peduncles, large, thick, 1 to 2 in. long; fertile, becoming rather loose and flexuous in fruit (lengthening sometimes to 3 in.); scale acutish, dark, villose with crisp hairs, sometimes densely or again thinly hairy or quite naked at the tip; capsule glabrous, rostrate from an ovate base; pedicel three times the length of the nectary; style medium or elongated, about equalling the pedicel, stigmas short, entire or bifid." Summit of South Kootanie Pass, Rocky Mountains; and Cassiar Trail, 20 miles north-west of Dease Lake, N.W.T. (*Dawson.*) Mountains around Kicking Horse Lake and the summit of the Selkirks; also on the summit of the Gold Range north of Griffin Lake, B.C. Alt. 6500 feet. (*Macoun.*) Summit of Mount Queest, Gold Range, B.C. (*J. M. Macoun.*) Kodiak. (*Kellogg.*)

The articles published by Mr. M. S. Bebb in the Botanical Gazette, on the North American Willows, should be consulted in connection with this genus.

563. JUNIPERUS.

(2068.) **J. communis**, Linn., var. **alpina**, Linn.; Macoun, Cat. III., 462.

On mountains at Spence's Bridge, B.C.; summits of mountains Benson, Mark and Arrowsmith, Vancouver Island. (*Macoun.*)

564. TAXUS.

(2070.) **T. brevifolia**, Nutt.; Macoun, Cat. III., 463.

Assuming the form of a small tree, between Sproat's Landing and Nelson, and on Kootanie Lake, B.C. (*Dawson.*)

565. PINUS.

(2075.) **P. albicaulis**, Engelm.; Macoun, Cat. III., 465.

Generally abundant in southern interior of British Columbia, between heights of 5000-6000 feet; Toad Mountain and vicinity to 7000 feet. (*Dawson.*)

(2077.) **P. ponderosa**, Dougl., var. **scopulorum**, Engelm.; Macoun, Cat. III., 466.

From near the head of Lower Arrow Lake, southward, and all along Kootanie Lake, B.C. (*Dawson.*)

566. PICEA.

(2082.) **P. nigra**, Link.; Macoun, Cat. III., 468.

Since the publication of Part III., we have made extensive collections in Prince Edward Island, and having observed the so-called species, *P. nigra* and *P. rubra*, growing together, we are satisfied that they are distinct enough to be separated as a species and variety. In Gray, Man., ed. VI., 492, *P. rubra* is admitted as a variety, and we now write it as:—

Var. **rubra**, Engel.; Gardn. Chron. (N.S.), XI., 1879.

Differs from the species in having darker and larger leaves; larger, bright red-brown cones, which are more readily deciduous after maturity. (*Engelm.*) It is more than probable that in the far Northwest we have a species or variety that is also distinct from the typical eastern *P. nigra*. This form has large ovoid cones, which are deep purple, and without the brownish tint of those from the east.

567. TSUCA.

(2088.) **T. Pattoniana**, Engelm.; Macoun, Cat. III., 472.

On the higher slopes of the mountains at the Glacier Hotel, Selkirk Summit; also on the summit of Mount Benson (alt. 3000 feet), Mount Mark (alt. 3300 feet), and Mount Arrowsmith (alt. 5500 feet), Vancouver Island. 1887. (*Macoun.*) In valleys of the Coast Range at head of Chilkoot Inlet (Lat. 59° 30'), and on the Chilkoot Pass to

over 3000 feet altitude. (*Dawson*.) It is very probable that this species is found on all summits on Vancouver Island, over 2500 feet high.

769. ABIES.

(2093.) *A. amabilis*, Forbes; Macoun, Cat. III., 475.

Abundant, in company with *T. Pattoniana*, on the summits of mounts Mark, Benson and Arrowsmith, Vancouver Island, 1887; not observed on the mountains of the mainland in 1889. (*Macoun*.)

570. LARIX.

(2094.) *L. Americana*, Michx.; Macoun, Cat. III., 475.

Extends west of the Rocky Mountains in the Liard Valley to Lat. 61° 55", Long. 130°. (*Dawson*.)

(2095.) *L. occidentalis*, Nutt.; Macoun, Cat. III., 475.

On the mountain side, east of Sicamous, about 500 feet above the lake. 1889. (*Macoun*.) From about half-way down the Upper Arrow Lake, southward along the Columbia Valley, B.C.; on Kootanie Lake, to the north end, and farther. (*Dawson*.)

591. CORALLORHIZA.

(2217.) *C. odontorhiza*, Nutt.; Macoun, Cat. IV., 5.

Rather common in moist woods at Plover Mills, Middlesex Co., Ont. (*R. Elliott*.)

600. HABENARIA.

(2249.) *H. elegans*, Bolander; Macoun, Cat. IV., 17.

On the mountain side at Sicamous, B.C., 1889. (*Macoun*.)

(2258.) *H. psycodes*, Gray; Macoun, Cat. IV., 19.

A form with deeply lacinate lip, and the flowers more erect and in a narrower spike than usual (in this respect approaching *H. lacera*), was found in a wet meadow at Baddeck, Cape Breton Island, July 19th, 1883. These plants, which had purple flowers, are, I fancy, hybrids between *H. psycodes* and *H. lacera*, both of which were abundant in the

same meadow. Prof. Eaton, to whom specimens were referred, was much struck with their peculiar appearance. (*Burgess.*)

601. CYPRIPIEDUM.

(2261.) **C. parviflorum**, Salisb.; Macoun, Cat. IV., 20.

North Thompson River, 25 miles north of Kamloops, B.C. Alt. 3000 feet. 1889. (*J. McEvoy.*)

(2265.) **C. montanum**, Dougl.; Macoun, Cat. IV., 22.

Abundant in grass at the station yard at Agassiz; and on the hill-sides at Sicamous, B.C., 1889. (*Macoun.*)

603. IRIS.

(2272.) **I. prismatica**, Pursh; Gray, Man., ed. VI., 514.

I. Virginica, Macoun, Cat. IV., 24.

Collected at New Harbor, Newfoundland. (*Rev. A. C. Waghorne.*)

604. SISYRINCHIUM.

(2276.) **S. angustifolium**, Mill.; Gray, Man., ed. VI., 515.

References under *S. mucronatum*, Michx., Part IV., 25, belong here.

793. MUSCARI, Tour. (GRAPE-HYACINTH.)

(3186.) **M. BOTRYOIDES**, Mill.; Gray, Man., ed. VI., 523.

Grand Trunk Railway track, between Hamilton and Dundas, May, 1888. (*Mr. Galbraith.*) Burlington, near Hamilton, Ont. (*Burgess.*) Evidently escaped from gardens.

611. SMILICINA.

(2291.) **S. racemosa**, Desf.; Macoun, Cat. IV, 31.

The specimens gathered on Vancouver Island in 1887, and referred doubtfully to *S. amplexicaulis*, belong here. Port Haney and other places in the Fraser Valley, B.C., 1889, *S. amplexicaulis* not seen. (*Macoun.*)

- (2290.) **S. sessilifolia**, Nutt.; Macoun, Cat. IV., 31.

Specimens collected in 1889, at Agassiz and Spence's Bridge, B.C., have the flexuous stem and distichous leaves of this species. They are quite distinct from *S. stellata*, of the Rocky Mountains and eastward. (Macoun.)

619. ERYTHRONIUM.

- (2323.) **E. grandiflorum**, var. (?) **albiflorum**, Hook.; Macoun, Cat. IV., 41.

Common in rich woods along the Hastings and New Westminster Road at Burnaby Lake, B.C., 1889. (*J. M. Macoun.*)

Var. **giganteum**, Hook.; Macoun, Cat. IV., 42.

Very abundant at Sicamous, and in fine flower April 3rd, 1889; common on mountain slopes around Shuswap Lake, and on mountains in the Gold Range at Griffin Lake, B.C., 1889. Flowers very large and bright yellow. Quite distinct from the Coast and Vancouver Island form. (Macoun.)

623. XEROPHYLLUM.

- (2328.) **X. tenax**, Nutt.; Macoun, Cat. IV., 43.

On Toad Mountain, 6000 feet, West Kootanie, B.C., 1889. (*Dawson.*)

794. OAKESIA, Watson.

- (2335.) **O. sessilifolia**, Watson; Gray, Man., ed. VI., 528.

Uvularia sessilifolia, Linn.; Macoun, Cat. IV., 45.

Dr. Watson in the new manual makes the above new genus to include this and another species.

637. JUNCUS.

- (2358.) **J. effusus**, Linn., var. **brunneus**, Engelm.; Macoun, Cat. IV., 55.

Abundant, growing in tufts at Hastings and Port Moody, B.C., 1889. (Macoun.)

- (2359.) **J. filiformis**, Linn.; Macoun, Cat. IV., 55.

Growing in profusion at Kamloops, B.C., 1889. (Macoun.)

- (2363.) **J. Drummondii**, E. Meyer; Macoun, Cat. IV., 57.

Plateau east of Adam's Lake, B.C. Alt. 6000 feet. 1888. (*Dawson*.)
Abundant on Mount Queest and other summits of the Gold Range,
B.C., 1889. (*J. M. Macoun*.)

- (2373.) **J. Gerardi**, Lois.; Macoun, Cat. IV., 60.

In salt marshes along both sides of Burrard Inlet, B.C., 1889.
(*Macoun*.)

- (2375.) **J. falcatus**, E. Meyer, var. **paniculatus**, Engelm, Trans.
Acad. St. Louis.

Abundant in grassy places, shore of Shawnagin Lake, Vancouver
Island, 1887. (*Macoun*.)

- (2376.) **J. longistyllis**, Torrey; Macoun, Cat. IV., 60.

In a marsh at Penticten, at the southern end of Lake Okanagan,
B.C. 1889. (*Macoun*.)

- (3187.) **J. oxymiris**, Engelm., Trans. Acad. St. Louis.

This is what was referred to *J. xiphioides*, var. *littoralis*, in Part IV., 65.
Mr. F. V. Coville, of the Dept. of Agriculture, Washington, DC., informs
me that my specimens distributed as above are really this species.

- (3188.) **J. Bolanderi**, Engelm., Trans. Acad., St. Louis.

J. xiphioides, var. *macranthus*, Macoun, Cat., IV., 65, in part.

Some of the specimens distributed as var. *macranthus* are of this
species while others are quite correct. Those collected at Lost Lake
near Cedar Hill, Vancouver Island, have the knotted almost terete
leaves that distinguish the species from every form of *J. xiphioides*.

638. LUZULA.

- (2292.) **L. spadicea**, DC.; Macoun, Cat., IV., 65.

At the summit of Mount Queest, and on the mountains north of
Griffin Lake in the Gold Range, B.C. Alt. 6000 to 7000 feet. 1889.
(*Macoun*.) This is the first record we have of the type in Canada. It
is quite distinct from var. *parviflora*, the flowers being twice as large.

(2391.) **L. vernalis**, DC. ; Gray, Man., ed. VI., 546.

L. pilosa, Willd. ; Macoun, Cat., IV., 67.

Changed in Gray's new Manual. A very appropriate name.

640. SPARGANIUM.

(2401.) **S. simplex**, Huds. ; Macoun, Cat., IV., 70.

In marshes in many parts of Prince Edward Island, 1888 ; abundant at Agassiz, in the Fraser valley, and at Craigellachie in the Gold Range, B.C. 1889. (*Macoun.*)

Var. **Nuttallii**, Engelm.

In marshes at Mount Stewart, Prince Edward Island. 1888. (*Macoun.*) Mr. Beeby doubtfully refers this specimen here.

Var. **acaule**, Beeby, MS.

"Stem three inches from crown of root to apex of male spike, female heads 2-3, closely agglomerated, partly hidden by the leaf bases. Leaves erect, rigid, a foot high. (Three times longer than the flower stem.)" (*Beeby.*) Quite common in ponds and wet spots by the roadside in many parts of Prince Edward Island, especially at Lake Verde, Brackley Point and Winter River. 1888. (*Macoun.*) I believe this to be a good variety as there was no local reason for the peculiar growth.

Var. **longissimum**, Fries.

Abundant in still water, Spallumsheen River at Enderby, B.C. (*J. M. Macoun.*) Common in Griffin Lake in the Gold Range, B.C. (*Macoun.*) I believe that much of our *S. affine* belongs here, especially those forms with floating stems and leaves.

(2402.) **S. affine**, Schnitzlein ; Macoun, Cat., IV., 70.

In pools on the mountains at the head of Nicoamen River, B.C. Alt. 6000 feet. 1889. (*Dawson.*) In a pool on Mount Arrowsmith. Vancouver Island. Alt. 5000 feet. 1887. (*Macoun.*) This is an alpine form of the species. (*Beeby.*)

(2404.) **S. minimum**, Fries. ; Macoun, Cat. IV., 70.

In bogs, Methy River, Lat. 56°, N.W.T. 1888. (*J. M. Macoun.*) Common in ponds at Craigellachie, Gold Range, B.C. 1889. (*Macoun.*)

641. ARISÆMA.

(2406.) **A. Dracontium**, Schott.; Macoun, Cat. IV., 72.

On a flat in Delaware Township near London, Ont. 1889. (*Mr. H. D. Johnson.*) On an island in the Sydenham River, near Strathroy, Ont. (*Dearness.*)

642. PELTANDRA.

(2407.) **P. undulata**, Raf.; Gray, Man., ed. VI., 72.

P. Virginica, Macoun, Cat. IV., 72.

Very local in its distribution. Should be looked for in western Ontario.

647 LEMNA.

A species of this genus resembling *Spirodela polyrrhiza* in color, but having the general appearance of *L. minor*, and with more than one root was common in ponds at Agassiz, B.C., May 20th, 1889. For the present this form must remain without a name or number.

795. SPIRODELA, Schleiden.

(2414.) **S. polyrrhiza**, Schleid.; Gray, Man., ed. VI., 552.

Lemna polyrrhiza, Linn.; Macoun, Cat. IV., 75.

In still water at Sicamous, Agassiz, and Port Hailey, B.C. 1889. (*Macoun.*)

648. WOLFFIA.

(2415.) **W. Columbiana**, Karsten; Macoun, Cat. IV., 76.

In a bay of Lake Ontario, west of Niagara Town, in company with *W. Brasiliensis*, Weddell. 1889. (*Dearness.*)

650. SACITTARIA.

(2418.) **S. variabilis**, Engelm.; Macoun, Cat. IV., 77.

Abundant in the South Thompson River at Kamloops, B.C. 1888. (*Dawson.*) In marshy spots subject to tide action along the lower

Fraser opposite Lulu Island; also on the Indian Reservation at Kamloops and eastward up the South Thompson, and the whole length of Shuswap Lake, and up the Spallumsheen River to, and beyond Enderby, B.C. 1889. (*Macoun.*)

656. POTAMOCETON.

(2430.) **P. Pennsylvanicus**, Cham.; Gray, Man., ed. VI., 559.

P. Claytonii, Tuckerman; Macoun, Cat. IV., 82.

In the Kaministiquia River near Fort William, Lake Superior. 1889. (*Dr. Britton.*) Rivière des Aulnais, Q. (*St. Cyr.*)

(2434.) **P. alpinus**, Balbis (1804); Bennett, Letter, March 3, 1890.

P. rufescens, Schrad. (1815); Macoun, Cat. IV., 83.

"The specimens from 'Ounalashka,' (Herb., Berlin) were named *P. microstachys*, Wolfgang in Roem. & Schultze, Veg. Sys., Mant. 3, p. 360 (1827); but the specimens are only a var. (?) or form of *P. rufescens*, Schrad. This name, *P. rufescens*, will probably have to give way. There are three, certainly, if not more, prior names; but it is not settled yet which is the earliest. I have a Greenland specimen of *P. rufescens*." (*Bennett*, 1888.) Anstey's Creek, Shuswap Lake; and Bonaparte River, B.C. (*J. M. Macoun.*) Griffin Lake, Gold Range, B.C., 1889. (*Macoun.*)

(2435.) **P. fluitans**, Roth.; Gray, Man., ed. VI., 560.

P. lonchites, Tuck.; Macoun, Cat. IV., 83.

Mr. Morong considers this *P. lonchites* or var. *Americanus* of that species; but Mr. Bennett, of Croydon, thinks it is *P. pumilus*, Wolfgang. This would date from 1827. Roem. et Schultze, Sys. Veg. Mant. 3.

A plant provisionally referred here is spoken of by Mr. Bennett, as below:—

"Your plant (No. 21) is like a specimen from Silesia, in Prussia, named '*P. natans* var. *prolixus*, Koch, = *P. serotinus*, Shrad., but your plant has the leaves narrower, and larger, and the stipules shorter, and must be studied and described later. A further examination of your specimens shows them to be much like a plant in Wallich's herb. from India, named '*P. didymus*, Wall., Nepalia, 1821;' but there is no fruit on his specimen. This, anyhow, seems to fall under *P. fluitans* as an aggregate species. After a good deal of comparing with all the *natans* group, I can come to no other result than

that this (No. 21) is a form of *P. lonchites*, Tuckerman. The only actual difference is the shining lower leaves, but this and its peculiar yellow-brown colour may be produced by some local influence? But the stipules of your plant at once remove it from any form of *P. lucens* (*P. longifolius*, *Gaudichaudi*, &c.) Is the difference enough to call it a form?" (Bennett, Letter, March 3rd, 1890.)

(2437.) ***P. heterophyllus***, Schreb.; Gray, *Man.* VI., 561.

P. gramineus and var. *heterophyllus*, Macoun, *Cat.* IV., 84.

Both Mr. Bennett and Mr. Morong combine these, and prefer Schreber's name, as it is specific and well understood.

(2439.) ***P. Zizii***, Roth. (not Mertens & Koch.)

Mr. Bennett writes that Mertens & Koch published this as a variety, not as a species. Roth was the first to do this. It is not improbable that it has a prior name: *P. angustifolia*, Presl. Rather common in Griffin Lake, Gold Range, B.C. 1889. (*Macoun.*)

Var. ***Methyensis***, Bennett, MS.

Methy Lake, near Methy Portage, Lat. 57°, 1888. (*J. M. Macoun.*)

(2441.) ***P. perfoliatus***, Linn., var. ***Richardsonii***, Bennett, MS.

P. perfoliatus, Linn., var. *lanceolatus*, Robbins; Macoun, *Cat.* IV., 85.

"Dr. Robbins published this name in Gray, *Man.*, ed. V., 488; but it is pre-occupied by Blytt in *Norges Flora*, 1861, for a Norwegian var., which is not the same as Robbins' plant! [Le Grand, a French author, has since (1887) published a var. *lanceolatus*, a French form of *P. perfoliatus*.] I prefer the name var. *Richardsonii* for the American *P. lanceolatus*, after Dr. Richardson, who seems to have been the first to collect it. (*Glasgow Herb.*) British-American 'Franklin Expedition.'" (Bennett.) Methy Lake and River, Lat. 57°, 1888; Anstey's Creek, Shuswap Lake, B.C. 1889. (*J. M. Macoun.*) In a pond on the Reservation at Kamloops, B.C. 1889. (*Macoun.*)

(2443.) ***P. obtusifolius***, Mertens & Koch; Macoun, *Cat.* IV., 86.

Methy River, Lat. 57°, 1888. (*J. M. Macoun.*)

(2445.) **P. pusillus**, Linn., var. **elongatus**, Bennett, MS., 1890.

"A form of *P. pusillus*, that so far as I know has received no name. In my herbarium I have marked it '*P. pusillus*, var. *elongata*, *miki*.' I have specimens from Hungary that are very near these from B.C. It has some of the faces of *P. rutilus*, Wolf.; but that has much sharper leaves, with long stipules and rigid stems. There is no fruit, but the sepals (perianth segments) are large and long-hafted. I find, on referring to my notes, that exactly similar specimens to yours are in the British Mus. Herb., named '*P. rutilus*, Wolf.' It certainly does bear a resemblance to a specimen I have named *P. caespitosus*, Notte! (leg. Notte 7, = *P. rutilus*, Wolf.!) but the likeness is only superficial." (Bennett, Letter, March 3rd, 1890.) Spallumsheen River, at and above Enderby, B.C., July 10th, 1889. (*J. M. Macoun*.)

(2446.) **P. mucronatus**, Schrad.; Macoun, Cat. IV., 88.

"I name this now *P. Friesii*, Ruprecht in Bert. d. Russ. Reiches, 1845. There is good reason to think that Schrader's plant was the var. *acuminatus*, Schun. of *P. lucens*. This was (*Herb. Glasgow*) gathered by the Franklin Expedition." (Bennett.) Winter River, and Sea Cow Pond, Prince Edward Island, 1888. (*Macoun*.) Spallumsheen River, at Enderby, B.C. (*J. M. Macoun*.)

(2447.) For **P. rutilans**, Wolfgang; Macoun, Cat. IV., 88, read **P. rutilus**, Wolfgang in Reem. & Schultze, Veg. Sys. Mant. 3, p. 362 (1827.) "It is the *P. caespitosus* of Nolte." (Bennett.)

(3189.) **P. vaginatus**, Turcz., Flora baicalensi-dahurica, 1856. (Siberia.)

"This plant, placed under *P. pectinatus*, in Ledebour's Flora Rossica, vol. 4, is stated by Dr. Kihlman (of Helsingfors) in Botaniska Notisea, 1887, page 85, to have been brought from "Saskatchewan, Canada, Bourgeau, Palliser's Exp., 1858." (Bennett.) Buffalo Lake, N.W.T., Lat. 56°, 1888. (*J. M. Macoun*.)

(3190.) **P. flabellata**, Babington.

Mr. Bennett sent a specimen of this to Mr. Babington, who names it as above. It belongs to the same group as *P. pectinatus*. North Pond, near East Point, Prince Edward Island, 1888. (*Macoun*.) "(No. 11) *P. pectinatus*, Linn., var. *pseudo-marinus*, Bennett, = *P. pectinatus*, Linn.,

forma salina, Voch! (It really comes under *P. flabellata*, Bab., as a variety, but without fruit, it is impossible to say so.)" (*Bennett, Letter, 1890.*) In a saline pond north of Kamloops, B.C., June 13th, 1889. (*Macoun.*)

(2449.) ***P. pectinatus***, Linn.; Macoun, Cat. IV., 88.

"Judging by the young fruit this (No. 12) must go to *P. pectinatus*, Linn., as an aggregate. It comes close to the var. *longissimus*, Mertens & Koch (1823), which was issued in the Flora Laurica, 1860, as the var. *longissimus*, Weissmann Fl. Petrop." (*Bennett Letter, March 3rd, 1890.*) Pond on the Indian Reservation at Kamloops, B.C., June 26th, 1829. (*Macoun.*)

657. RUPPIA.

(3291.) ***R. lacustris***.

Stems rigid, firm and woody, forking and producing numerous leaves in bud-like clusters at the nodes and ends of the branches. Leaves sheathing, rigid and straight; stipules white, membranous from one to two inches long. Fruiting peduncles *bright red* rising from the centre of the leaf clusters, coiling spirally after flowering. Fruit immature.

A very distinct species, having more the appearance of *Potamogeton pectinatus* than *Ruppia maritima*. Abundant in a saline pond north of the Ferry at Kamloops, B.C., June 13th, 1889. The pond is one of a series in the bare hills above the trail leading to Tranquille. (*Macoun.*)

665. HELEOCHARIS.

(2467.) ***H. ovata***, R. Br.; Gray, Man., ed. VI., 574.

H. obtusa, Schultes; Macoun, Cat. IV., 95.

Not uncommon in British Columbia. Agassiz. 1889. (*Macoun.*)

(2468.) ***H. palustris***, Linn., var. ***Watsoni***, Clarke, Journ. Bot., XXV., 268. (1887.)

Stated by Mr. Clarke to occur in Newfoundland, Labrador, and sub-arctic America, and to be a very trifling depauperate form or variety with castaneous spike. (*Britton.*) Hudson Bay. (*Burke, fide Britton.*) In wet sand, Brackley Point, Prince Edward Island. 1888. (*Macoun.*)

Var. **vigens**, Bailey in Herb. Gray.

"Culm stout, thick, very spongy, constricted at the summit, nearly as thick as the ovate spike." (*Britton*) In muddy places by ponds, Victoria Road and Mount Stewart, Prince Edward Island. 1888. In a pond on the road to Cedar Hill about one mile from Victoria, Vancouver Island. 1887. (*Macoun*.)

(2469.) **H. acuminata** (Muhl.) Nees.; *Britton*, Journ. N. York, Micros. Soc., X., 109.

H. compressa, Sully.; *Macoun*, Cat. IV., 96.

Specimens referred to *H. tenuis* (in Part IV., 97) from Salt Lake, Anticosti; east coast of Lake Nepigon; Lake Superior at Thunder Bay; marsh, Porcupine Mountains, Man.; and Moose Jaw Creek, Assiniboia, belong here.

(2471.) **H. intermedia**, Schultes.; *Macoun*, Cat. IV., 96.

In mud along the shore of Leamy's Lake, near its outlet at Hull Cemetery, near Ottawa. 1889. (*Macoun*.)

672. CAREX.

(2505.) **C. capitata**, Linn.; *Macoun*, Cat. IV., 109.

Damp, grassy places, Methy River, Lat. 57°, N.W.T. 1888. (*J. M. Macoun*.)

(2507.) **C. dioica**, Linn.

Professor Bailey informs me that the specimens placed under this species in Part IV., 109, belong to *C. gynocrates*. This species is therefore cancelled, and references under it go to *C. gynocrates*.

(2524.) **C. Jamesii**, Schweinitz; Bailey, Mem. Torr. Bot. Club, I., 48.

References under *C. Steudelii*, Kunth, Part IV., 113, belong here.

(2528.) **C. Sartwellii**, Dew. Sill. Journ. XLIII., 90. (1842.)

References under *C. disticha*, Huds, Part IV., 114, belong here.

Prof. Bailey in Mem. Torr. Bot. Club, I., 8, says that "the American plant is abundantly distinct from the European *C. disticha*, Huds." Prof. Dewey and Dr. Boott thought otherwise, but we fully agree with Prof. Bailey in keeping them apart.

Var. **occidentalis**, Bailey, MS. N. Var.

Head lighter coloured than in the species; spikes more pointed; scales thin, whitish, very sharp and as long as, or longer than the perigynium. Guichon Creek, Nicola Valley, B.C. 1888. (*Dawson*.) Borders of saline marshes around Kamloops, B.C. 1889. (*Macoun*.)

(2529.) **C. Douglasii**, Boott; Macoun, Cat. IV., 115.

Abundant and in fine fruit on the dry arid plain between the Ferry and the North Thompson, opposite Kamloops, B.C., June, 1889. (*Macoun*.)

(2530.) **C. marcida**, Boott; Macoun, Cat. IV., 115.

Quite common on the dry flats by the Thompson River at Spence's Bridge and Kamloops, B.C. 1889. (*Macoun*.)

Var. **alterna**, Bailey, MS. N. Var.

"Tall and very slender, the culm even flexuose; spikes small and scattered, the lower ones a half inch or more separated and the head often 2 inches long; perigynium lance-ovate, longer than in the species and more strongly nerved, especially on the outer side, and strongly stipitate." In dry gravelly soil along Shuswap Lake near Scotch Creek, B.C., June 18th, 1889. (*Macoun*.)

(2533.) **C. teretiuscula**, Good., var. **ampia**, Bailey, Mem. Torr. Bot. Club, I., 53.

"Very large and stout, growing three feet or more high in dense tufts; heads large (2 to 3 in. long), much branched, chaffy; perigynium twice larger than in the species, nerved on the back, shining at maturity, produced into a long beak." Quaking bog, on the border of Burnaby Lake, near Vancouver City, B.C., April 19th, 1880. (*J. M. Macoun*.)

(2543.) **C. Hookeriana**, Dewey; Bailey, Mem. Torr. Bot. Club, I., 14.

C. muricata, var. *gracilis*, Boott; Macoun, Cat. IV., 118.

"Very slender; head interrupted, castaneous, small, the spikes sometimes alternately arranged; bracts of the two or three lower spikes produced into long awns, which surpass the spikes; perigynium small, green, usually lightly nerved, gradually produced into a beak which is cut into sharp awl-like teeth." See Part IV. for distribution.

- (2545.) **C. Hoodii**, Boott; Bailey, Mem. Torr. Bot. Club, I., 14; Macoun, Cat. IV., 119.

C. muricata, Linn., var. *confiza*, Bailey; Macoun, Cat. IV., 119.

In thickets at Agassiz, B.C., May 14th, 1889. (*Macoun.*)

- (2549.) **C. festiva**, Dew., var. **pachystachya**, Bailey, Mem. Torr. Bot. Club, I., 51.

C. festiva, Dew., var. *gracilis*, Macoun, Cat. IV., 120, in part.

"Culm more or less prolonged (1 to 3 ft.), flat and weak, longer than the lax leaves; heads small and globular or oblong, dull dark brown, the spikes often somewhat distinct, very short; perigynium spreading, about the length of, or somewhat longer than, the ovate-lanceolate muticous brown scale." Cedar Hill, near Victoria; Nanaimo; and Mount Mark, near Qualicum, Vancouver Island. (*Macoun.*) Alaska. (*Chamisso.*)

Var. **gracilis**, Olney; Macoun, Cat. IV., 120.

In grassy thickets at Agassiz, B.C., May 10th, 1889. (*Macoun.*)

- (3192.) **C. illota**, Bailey, Mem. Torr. Bot. Club, I., 15.

C. Bonplandii, Kunth? var. *minor*, Boott, Proc. Acad. Phila. (1863), 77.

C. Bonplandii, var. *angustifolia*, W. Boott, Bot. Calif. II., 233. (1880.)

"Distinguished from small forms of *C. festiva*, Dew., as follows:— Very slender and usually tall (6 in. to 19 in.), the head very small and globular or short-oblong ($\frac{1}{2}$ in. or less in diameter); perigynium completely marginless, thick below, stipitate, nerved, entirely smooth on the edges, the cylindrical and scarcely-cut beak projecting beyond the obtuse or muticous dark brown scale. The perigynia are considerably like those of the *C. canescens* group. This species stands midway between *C. festiva* and *C. heleonastes*." By little pools on the mountains north of Griffin Lake, B.C., at an altitude of 6000 feet, Aug. 1889. (*Macoun.*)

- (2551.) **C. synchnocephala**, Carey; Macoun, Cat. IV., 121.

In damp spots on the flat land north of the Ferry, at Kamloops, B.C., June 22nd, 1889. (*Macoun.*)

- (2554.) **C. remota**, Linn.; Macoun, Cat. IV., 122.

Professor Bailey writes me that this species is of very doubtful occurrence in Canada, so we cancel it.

(3193.) **C. Eleocharis**, Bailey, Mem. Torr. Bot. Club, I., 6.

"One of the *Vignae*, perhaps allied to *C. tenella*, Schk.; very slender but stiff, half a foot high, both leaves and culm filiform and smooth; spikes two or three, each bearing from one to three flowers, closely aggregated into a very small and apparently monostachyous head, evidently staminate above; perigynium short-ovate, turgid, flat on the inner face, marginless and nerveless, dull brown, beak entire or nearly so, as long as or longer than the thin hyaline scale." Collected on the Saskatchewan Plains, near Fort Carleton, in August, 1872. Col. Olney named it *C. glareosa*, and under this name it was distributed. It has never been seen since, but often looked for. (*Macoun.*)

(2557.) **C. canescens**, Linn., var. **polystachya**, Boott; Rich. Jour., II., 344.

C. arcta, Boott; Macoun, Cat. IV., 124, in part.

Erect and mostly strict, not glaucous, $1\frac{1}{2}$ to $2\frac{1}{2}$ feet high; leaves very lax and usually exceeding the culm; spikes oblong, green, more or less aggregated into a loose head, the lowest one or two subtended by a short and hyaline broad-based and pointed or caudate bract; perigynium more spreading than in the species.

All eastern references to *C. arcta*, in Part IV., belong here. The western to the next variety.

Var. **Oregana**, Bailey, Mem. Torr. Bot. Club, I., 75.

C. arcta, Boott; Macoun, Part IV., 125, in part.

"Head larger and more dense than in the var. *polystachya*, becoming brown; spikes loosely flowered, the perigynia sometimes spreading in a stellate manner; perigynium narrow, often almost linear-lanceolate, brown-nerved, sharp-edged and rough above." Very abundant in ditches at Hastings, B.C.; and Victoria and Nanaimo, Vancouver Island. (*Macoun.*) Cedar Hill, near Victoria, V. I. (*Fletcher.*) Vancouver City, Burrard Inlet, B.C. (*Prof. Fowler.*)

Var. **robustina**,

A very tall form growing in clumps in boggy places. Spikes 6 to 8, generally 7, often half an inch long, tapering at the base, lower spikes distant and peduncled, the latter four forming an oval head, lower with a short setaceous bract, whole head with a light silvery hue. In damp woods at Port Haney, B.C., May 1st, 1889. (*Macoun.*) Burnaby Lake, near Hastings, B.C., April, 1889. (*J. M. Macoun.*)

Var. **brunnea**,

Low and slender, scarcely a foot high, growing in tufts in ditches. Spikes brown, scattered, 3 to 5, generally 4, small, but elongated, the upper often half staminate; lower bract seldom longer than the spike. The scattered light-brown, elongated, spikes distinguish this variety from all other forms of the species. Port Haney and Port Moody, B.C., May 3rd, 1889. (*Macoun*.)

(2565.) **C. Liddoni**, Boott; *Macoun*, Cat. IV., 128.

Fine specimens were collected at Lytton and Spence's Bridge on the Thompson River, B.C., May, 1889. (*Macoun*.)

(2566.) **C. pratensis**, Drej., var. **furva**, Bailey, MS.

C. pratensis, *Macoun*, Cat. IV., 128, in part.

"Spikes much larger than in the type ($\frac{1}{2}$ in. or more long), more loosely flowered, dark brown. The culms appear to be more sharply angled, also." (*Bailey*.) Not uncommon in damp meadows at Cedar Hill, Goldstream, and throughout southern Vancouver Island, May 27th and 31st, 1887. (*Macoun*.)

(2567.) **C. foenea**, Willd., Enum. Pl. Hort. Berl., 957. (1809.)

C. adusta, *Macoun*, Cat. IV., 129, in part.

"Culm slender and often weak (1 to 2 feet high); head long and weak; spikes five to eight, small and silvery green, much contracted below and alternately disposed; perigynium varying from ovate to long-ovate, thin, much longer than the small achenium, prominently rough-margined, strongly many-nerved on both sides; bracts entirely wanting or very inconspicuous." In the valley of Eagle River at Griffin Lake, B.C., July 7th, 1889. (*Macoun*.)

Var. **perplexa**, Bailey; Mem. Torr. Bot. Club, I., 27.

C. adusta, *Macoun*, Cat. IV., 129, in part.

"Mostly taller and stouter than the species, the spikes larger and less attenuated or even truncate below, more approximate or even aggregated, the head erect or nearly so and the lowest bract sometimes prominent." Burnt woods, North Hastings, Ont., and near the Lake of the Woods. (*Macoun*.)

(2568.) **C. adusta**, Boott; Hook. Fl. II., 214.

References under *C. pinguis*, Bailey, Part IV., 129, belong here.

- (2572.) **C. straminea**, Willd.; Bailey, Mem. Torr. Bot. Club, I., 31.

C. straminea, var. *tenera*, Macoun, Cat. IV., 132.

This includes the lax forms hitherto included in var. *tenera*. In thickets at Agassiz and Shuswap Lake, B.C. 1889. (*Macoun.*)

Var. **brevior**, Dewey; Bailey, Mem. Torr. Bot. Club, I., 22.

References under *C. straminea* and var. *festucea*, Macoun, Cat., IV., 131-132, belong here.

Var. **cumulata**, Bailey, Mem. Torr. Bot. Club, I., 23.

C. straminea, var. *alata*, Macoun, Cat. IV., 133.

"Culm very tall and stiff; spikes several to many (sometimes 25!), greenish, usually aggregated into a bunchy head, very densely flowered and squarely contracted at the base, short and pointed, spreading; perigynium appressed, the points therefore not conspicuous."

- (3194.) **C. silicea**, Olney; Bailey, Mem. Torr. Bot. Club, I., 24.

C. straminea, var. *moniliformis*, Tuckerman; Macoun, Cat. IV., 133.

All references in Part IV., 133, under the above variety, belong here.

- (2573.) **C. Preslii**, Steud.; Bailey, Mem. Torr. Bot. Club, I., 52.

C. leporina, L., var. *Americana*, Olney; Macoun, Cat. IV., 133.

Prof. Bailey says that the synonym *C. petasata*, Dew., should not have been placed here in Part IV. All our own specimens go here. Summit of Mount Queest, Gold Range, B.C. Alt. 6000 feet, 1889. (*J. M. Macoun.*) Gold Range, north of Griffin Lake, B.C. Alt. 6500 ft. 1889. (*Macoun.*)

- (2574.) **C. bicolor**, Allioni; Macoun, Cat. IV., 134.

Of a specimen received from Mr. J. Brittain, Fredericton, New Brunswick, which we doubtfully referred here, Professor Bailey writes: "It has many of the characteristics of *C. bicolor*, but I should prefer to call it *C. aurea* until more material accumulates." It is retained here until New Brunswick collectors get more material. Upper Restigouche River, N.B., July, 1883. (*Brittain.*)

- (2578.) **C. atrata**, Linn., var. **ovata**, Boott; Macoun, Cat. IV., 135.

"Habitually more slender than the species and usually lower, spikes small or oblong-ovate, reddish-brown, slenderly peduncled." This form

includes all our herbarium specimens collected between the Atlantic Coast and the Rocky Mountains. Mountain specimens are placed under *C. atrata*, as they are identical with Greenland specimens, having the heads short peduncled and closely aggregated, while the scales are deep black without any tinge of red. The specimens referred to *C. atrata*, var. *nigra*, in Part IV., are placed with the species, and the variety disappears, as Prof. Bailey erects Olney's variety into a species named *C. nova*. All our specimens are more or less peduncled, and hence are excluded.

(2581.) **C. Parryana**, Dew.; Macoun, Cat. IV., 136.

In dry thickets along Shuswap Lake, at Scotch Creek, B.C., June, 1889. (*Macoun*.)

(2591.) **C. aurea**, Nutt., var. **celsa**, Bailey, Mem. Torr. Bot. Club, I., 75.

C. aurea, Nutt.; Macoun, Cat. IV., 138, in part.

"Taller than the species (15 to 20 in. high), and strict spikes large and compactly flowered, evenly cylindrical, longer peduncled." Somenos, and Horne Lake at Qualicum, Vancouver Island, 1887. (*Macoun*.)

(2592) For **C. albata**, Bailey, Macoun, Cat. IV., 139, read **C. ablata**, Bailey.

(2594.) **C. debilis**, Mx., var. **Rudgel**, Bailey, Mem. Torr., Bot. Club, I., 34.

References under *C. debilis*, Mx., Part IV., 139, belong here. "The common northern form." (*Bailey*.)

(2595.) **C. flava**, Linn., var. **viridula**, Bailey, Mem. Torr. Bot. Club, I., 31.

References under *C. Ederi*, Retz., Part IV., 140, belong here.

(2597.) **C. nudata**, W. Boott, var. **angustifolia**, Bailey, Mem. Torr. Bot. Club, I., 16.

References under *C. caespitosa*, Linn., and var. *filifolia*, Boott, Part IV., 141, belong here.

- (2598.) **C. vulgaris**, Fries, var. **strictiformis**, Bailey, Mem. Torr. Bot. Club, I., 74.

C. vulgaris, Macoun, Cat. IV., 142, in part.

"Tall and lax ($1\frac{1}{2}$ to $2\frac{1}{2}$ ft. high), the leaves long and narrow; staminate spike longer peduncled; pistillate spikes looser and often longer than in the species, the perigynia never being so densely packed and usually becoming browner." Lower St. Lawrence. (*Pringle*, fide *Bailey*.) North-west Arm Ferry and Point Pleasant, Halifax, N.S.; also at the mouth of Madalene River, Gaspé Coast, Q. (*Macoun*.)

- (2599.) **C. decidua**, Boott; Macoun, Cat. IV., 143.

The specimens from Rogers' Pass, Selkirk Mountains, belong here. It turns out to be a common species in British Columbia, and seems as much at home at 1000 feet altitude as at 6000. Mount Queest, Gold Range, B.C. (*J. M. Macoun*.) On the Gold Range north of Griffin Lake, alt. 6000 feet; shore of Shuswap Lake, and along the Thompson to Kamloops, quite common. (*Macoun*.) Professor Bailey writes that the present arrangement of specimens under this species is provisional. It is the Pacific representative of *C. vulgaris*.

- (2600.) **C. invisa**, Bailey; Macoun, Cat. IV., 143.

Common along Queest Creek, Shuswap Lake, B.C. Alt. 5000 feet. (*J. M. Macoun*.) Mountains north of Griffin Lake, Gold Range, B.C. Alt. 6000; also along Spallumsheen Arm, at Sicamous, B.C. 1200 feet alt. 1889. (*Macoun*.)

- (3195.) **C. variabilis**, Bailey, Mem. Torr. Bot. Club, I., 18.

C. aquatilis, Macoun, Cat. IV., 143, in part.

"Glaucous; mostly low (2 feet or less high), stout, culm sharply angled, roughish on the angles; leaves rather broad (as compared with *C. stricta*, Lam.); spikes three or four, short and stout (2 in., or less, long), borne near the top of the culm, erect, the lower one or two conspicuously attenuated at the base, and appearing clavate, the upper sessile, lower peduncled; bracts leaf-like and broad, the lower one or two equalling or exceeding the culm; perigynium small and broadly ovate, abruptly and very short beaked, nerveless, beak entire, green or whitish, conspicuously broader and usually shorter than the obtuse or muticous black scale." Old Wives' Lakes, Assiniboia; along Bow River at Calgary, Alberta. (*Macoun*.)

Var. **elatior**, Bailey, l.c.

"Much taller, the leaves very long, and narrower; spikes longer (often 3 to 4 in.) and more slender, the lower much attenuated below, the upper bearing conspicuous staminate portions; bracts long and narrow." Open thickets at Morley, foot-hills of Rocky Mountains; Kicking Horse Lake, Rocky Mountains, and Donald, in the Columbia Valley; near Cedar Hill, Victoria, Vancouver Island. (*Macoun*.)

- (2601.) **C. Nebraskensis**, Dew., var. **prævia**, Bailey, Mem. Torr. Bot. Club. I., 49.

References under *C. Jamesii*, Torrey, Part IV., 143, belong here, and the synonym *C. compacta*, should not have been placed under this species.

- (3196.) **C. aperta**, Boott; Hook., Fl., II., 218, 219.

Fifty miles up the North Thompson River, above Kamloops, B.C. 1889. (*J. M. Macoun*.) By a lake near Fort St. James, northern British Columbia, June, 1875; abundant at Shuswap Lake and Agassiz, B.C. 1889. (*Macoun*.)

- (2605.) **C. acutina**, Bailey, Mem. Torr. Bot. Club. I., 52.

C. acuta, Linn.; *Macoun*, Cat. IV., 146.

"A fine suite of specimens of *Carex acuta* given me by Arthur Bennett, Croydon, England, and a study of the species in various foreign herbaria, have enabled me to draw lines of separation between the European plant and the western plants which have been referred to it. *C. acutina* differs from *C. acuta* in the pale color of the plant and its lesser size and thin leaves, habitually smaller spikes, thinner and shorter perigynium, which is much less prominently nerved, and the lighter colored obtuse or mucous scales." (*Bailey*.) Lewes River, Lat. 62°, N.W.T., 1887. (*Dawson*.)

- (2608.) **C. salina**, Wahl.; Bailey, Mem. Torr. Bot. Club. I., 45.

References under *C. salina*, Wahl., var. *mutica*, Wahl., Part IV., 147, belong here.

- Var. **cuspidata**, Wahl.; Bailey, Mem. Torr. Bot. Club. I., 46.

References under *C. salina*, Wahl., Part IV., 146, belong here.

- (3197.) **C. Macounii**, A. Bennett; Bailey, Mem. Torr. Bot. Club, I., 45.

C. salina, var. (?) *robusta*, Bailey; Macoun, Cat. IV., 147.

See description and notes on page 147.

- (2611.) **C. cryptocarpa**, Meyer, var. **pumila**, Bailey, Mem. Torr. Bot. Club, I., 27.

C. cryptocarpa, Macoun, Cat. IV., 148 in part.

"Low (6 to 12 in. high); pistillate spikes, commonly two, short ($\frac{3}{4}$ in. or less), ovate or short-oblong; scales broad and muticous, but little longer than the much lighter colored perigynium." Queen Charlotte Islands. (*Dawson*.) Vicinity of Victoria, Vancouver Island. (*Fletcher*.) Gordon Head, Nanaimo, Qualicum and Comox, Vancouver Island; common in salt marshes along Burrard Inlet, B.C. 1889. (*Macoun*.)

- (2613.) **C. Barbaræ**, Dew.; Macoun, Cat. IV., 148.

Quite common on the border of Burnaby Lake, and eastward in marshes to Griffin Lake, in the Gold Range, B.C. 1889. (*Macoun*.)

- (2620.) **C. Raynoldsii**, Dew.; Macoun, Cat. IV., 151.

In a mountain valley north-west of Spence's Bridge, B.C. 1889. (*J. M. Macoun*.)

- (2627.) **C. Salterensis**, Bailey, Mem. Torr. Bot. Club, I., 7.

C. vaginata, Tausch.; Macoun, Cat. IV., 153.

Professor Bailey separates this species from the European *C. vaginata* by its much more slender and less caespitose habit, narrower leaves and less conspicuous sheaths, its alternately-flowered spikes, and its much smaller, less inflated, and conspicuously nerved perigynium. All references in Part IV., 153, belong here. Low ground near Hamilton, Ont., 1889. (*Burgess*.)

- (2636.) **C. laxiflora**, Lam.; Macoun, Cat. IV., 155.

Professor Bailey has revised this species and finds the type to be what we have been calling *C. laxiflora*, var. *intermedia*, Boott. It embraces slender plants, characterized by narrow leaves (usually less than $\frac{1}{2}$ in. in width), a peduncled, or at least very conspicuous staminate spike, scattered pistillate spikes, which are very loose flowered and

narrow ($\frac{1}{2}$ to $1\frac{1}{2}$ in. long), and very blunt perigynium. This includes both the type and var. *intermedia* of Part IV., 155. The synonymy may be considered cancelled, as it only refers in part to the type.

(2637.) **C. Hendersoni**, Bailey.

Not uncommon in woods and open thickets between Yale and the coast of British Columbia, 1889. (*Macoun*.)

(2638.) **C. laxiculmis**, Schweinitz; Bailey, Mem. Torr. Bot. Club, I., 47.

C. retrocurva, Dew.; Macoun, Cat. IV., 156, in part.

"Distinguished by its glaucousness." (*Bailey*.)

(2639.) **C. digitalis**, Willd., var. **copulata**, Bailey, Mem. Torr. Bot. Club, I., 47.

C. retrocurva, Macoun, Cat. IV., 156, in part.

"Larger than in the species, the culm weak and reclining, sometimes two feet long; leaves twice or thrice broader; spikes shorter and heavier; perigynium mostly larger. In aspect much like *C. laxiculmis*, but has no glaucousness, the upper spikes are shorter peduncled." (*Bailey*.) Wet ravines, London, Ont., June 24th, 1881. (*Burgess*.)

(2647.) **C. Pennsylvanica**, Lam., var. **vespertina**, Bailey, Mem. Torr. Bot. Club, I., 47.

C. Pennsylvanica, Macoun, Cat. IV., 158, in part.

"Habitually taller than the species, very slender; staminate spike commonly slimmer and usually very short-peduncled; pistillate spikes more separated and the lowest subtended by a leafy bract from one half inch to one inch long; perigynium mostly larger, more hairy, the beak longer and stouter." This form includes all our British Columbia and Vancouver Island specimens of *C. Pennsylvanica*.

(2648.) **C. communis**, Bailey, Mem. Torr. Bot. Club, I., 41.

Reference under *C. varia*, Muhl., Part IV., 159, except those given below, belong here.

Var. **Wheeleri**, Bailey, Mem. Torr. Bot. Club, I., 41.

C. varia, Macoun, Cat. IV., 159, in part.

"Mostly lower than the species; leaves very numerous, very broad and bright green, conspicuously shorter than the culm; staminate

spike very short (usually only a fourth or a third of an inch long), closely sessile-inclined and inconspicuous; lowest bract leaf-like, often an inch or two long." On the sides of ravines, Truro, and Pirate's Cove, Strait of Canso, N.S. 1883. (*Macoun & Burgess.*)

(2649.) **C. varia**, Muhl., in Wahl. Kongl. Acad. Handl., XXIV., 159. (1803.) Bailey, Mem. Torr. Bot. Club, I., 40.

References under *C. Emmonsii*, Dewey, Part IV., 159, belong here.

(2650.) **C. Novæ-Angliæ**, Schw.; Bailey, Mem. Torr. Bot. Club, I., 44.

C. Novæ-Angliæ, Macoun, Cat. IV., 160, in part.

"Very slender, stoloniferous, the culms 6 to 8 inches high, about the length of the very narrow loose leaves; staminate spike quite distinct, erect and prominent, 3 to 8 lines long, mostly minutely peduncled, exceedingly narrow (about half a line broad); pistillate spikes usually two, the upper near the base of the staminate spike, the lower from $\frac{1}{2}$ to 1 inch removed and short-stalked and subtended by a bract which nearly or quite equals the culm, both rather loosely three to six-flowered; radical spikes none; perigynium very narrow, often nearly oblanceolate, very thinly hairy, the sharp beak prominent; stigmas often two." In damp woods, Point Pleasant, Halifax, N.S. (*Burgess & Macoun.*) Grassy places at Cove Head and Brackley Point, Prince Edward Island. (*Macoun.*) Woods near St. Martin, N.B. 1888. (*Brittain.*)

(3198.) **C. deflexa**, Hornemann; Bailey, Mem. Torr. Bot. Club, I., 41.

C. Novæ-Angliæ, Macoun, Cat. IV., 160, in part.

"Very low, much tufted; culms from 1 to 6 inches long, setaceous more or less curved or spreading, little exceeding or shorter than the narrow leaves; staminate spike exceedingly minute and nearly always invisible in the head; pistillate spikes two or three, two to five-flowered, green or green-and-brown, all aggregated into a small head, the lowest one always more or less short-peduncled and subtended by a leafy bract, a half inch or less long; radical spikes very few or none; perigynium very small, much contracted below, sparsely hairy or nearly smooth, the flat beak exceedingly short." On sandy or rocky places near water, Gaspé Peninsula, Q. (*Macoun.*) Portage, Kent Co., N.B. (*Brittain.*)

Var. **Deanii**, Bailey, Mem. Torr. Bot. Club, I., 42.

C. Novæ-Angliæ, Macoun, Cat. IV., 160, in part.

"Taller and laxer, the culms from 6 to 12 inches high and some or all prominently exceeding the long, loose, soft leaves; staminate spike much larger (2 to 3 lines long), erect or oblique, strictly sessile; pistillate spikes larger (four to eight-flowered), less aggregated or the lowest usually separated, though rarely more than a quarter of an inch removed; radical spikes usually numerous; bract mostly longer. Macnab's Island, Halifax Harbor, and Truro, N.S.; crevices of rocks, Brackley Point, Prince Edward Island; Sudbury Junction and Port Arthur, Ont. (*Macoun.*)

Var. **media**, Bailey, Mem. Torr. Bot. Club, I., 43.

C. Novæ-Angliæ, var. *deflexa*, Bailey; Macoun, Cat. IV., 160.

"Rather stiff, 4 to 12 inches high, in dense tufts; most of the culms somewhat exceeding the leaves; staminate spike prominent and erect, 3 to 5 lines long, sessile or very short peduncled; pistillate spikes two or three, all scattered, the uppermost at, or near, the base of the staminate spike, the lowest very prominently peduncled and subtended by a conspicuous bract which surpasses the culm, all rather compactly, three to eight-flowered, green, or brown-green; radical spikes usually abundant; perigynium much as in short-beaked forms of *C. umbellata*; scales large and sharp equalling or exceeding the perigynium." Grassy thickets, McLeod's Lake, and Telegraph Trail, B.C.; also on Mount Arrowsmith, Vancouver Island. Alt. 5500 feet. (*Macoun.*)

Var. **Rossii**, Bailey, Mem. Torr. Bot. Club, I., 43.

C. Novæ-Angliæ, var. *Rossii*, Bailey; Macoun, Cat. IV., 160.

"Stiff throughout, very strict, the leaves mostly equalling or exceeding the culms, the whole plant usually light-colored; staminate spike much as in the last, often larger; pistillate spikes one to three, distinct or sometimes scattered, loosely one to four-flowered; radical spikes usually abundant; scales very sharp, greenish-white or very rarely bearing an inconspicuous colored margin." In woods, from the Pacific coast to Spence's Bridge. (*Macoun.*)

(3199.) **C. amplifolia**, Boott; Hook. Fl. II., 228, t. 226.

In abundance in and around springs in woods Vernon, near Lake Okanagan, B.C. 1889. (*Macoun.*)

(2655.) **C. castanea**, Wahl.; Gray, Man., ed. VI., 603.

References under *C. flexilis*, Rudge, Part IV., 162, belong here.

(2658.) **C. capillaris**, Linn.; Macoun, Cat. IV., 163.

C. capillaris var. *Krausei*, Macoun, Cat. IV., 163.

C. Saskatchewan, Macoun, Cat., IV., 163.

Prof. Bailey having examined the specimens upon which these forms were founded, refers them both here.

(2671.) **C. lupulina**, Muhl. (1805); Bailey, Mem. Torr. Bot. Club, I., 11.

References under *C. lurida*, Wahl., Part IV., 167, belong here. Prof. Bailey shows that *C. lurida*, properly belongs to *C. tentaculata*.

Var. **Bella-villa**, Bailey, Mem. Torr. Bot. Club, I., 12.

References under *C. lurida*, var. *divergens*, Bailey, Part IV., 168, belong here.

Var. **pedunculata**, Dewey; Bailey, Mem. Torr. Bot. Club, I., 12.

References under *C. lurida*, var. *polystachya*, Bailey, Part IV., 168, belong here.

(2673.) Since writing the article under this number, Part IV., 168, we have received specimens of *C. Raeana* (named by Boott), from the British Museum, and can make nothing of it except an immature specimen of *C. oligosperma*. In the summer of 1888, J. M. Macoun collected on Methy Portage many specimens of both *C. oligosperma* and *C. monile*. Prof. Bailey in Mem. Torr. Bot. Club, Vol. I., 39, makes *C. Raeana* a variety of *C. monile*. It is very probable that Boott had young specimens of *C. oligosperma* and *C. monile* before him when he characterized the species he named *C. Raeana*. The description of Prof. Bailey combines the spikes of *C. monile* and the leaves of *C. oligosperma*, and the compound is Boott's *C. Raeana*. Prof. Bailey writes me that "The type of *C. Raeana*, in Herb. Boott, is clearly different from *C. oligosperma*." Whatever it is there is no evidence that it is a good species, and may be, as I state above a compound of *C. monile* and *C. oligosperma*.

(2674.) **C. miliaris**, Michx.; Bailey, Mem. Torr. Bot. Club, I., 35.

C. miliaris, Michx. . Macoun, Cat. IV., 199, in part.

C. Raeana, Boott; Macoun, Cat. IV., 168, in part. .

Below is Prof. Bailey's arrangement of the species, and I agree with his remark that "whatever future observers may decide as to the merits of the varieties I propose, the disposition suggested cannot fail to make the species better known." My difficulties are all cleared away by the arrangement, but var. *major* may be Michaux's type.

"Culm very slender but erect (12 to 18 in. high), smooth or slightly rough above on the angles; leaves narrow, often almost filiform, rough on the edges, mostly shorter than the culm; staminate spikes one or two, elevated an inch or more from the upper pistillate spike, very narrow, an inch or less long; pistillate spikes one to three, the upper one sessile and the lower very short-stalked, small ($\frac{3}{4}$ in. or less long), the lowest subtended by a bract which usually exceeds it; perigynium very small, broadly or round-ovate or ovate-oblong; thin but firm in texture, bearing a nerve upon either angle, but otherwise nerveless or sometimes bearing a few very faint nerves near the base, rounded into a very short and terete beak which is either entire or somewhat erose; pistillate scales brown, lance-ovate, ending in a sharp whitish tip which nearly or quite equals the perigynium." Island in the Saguenay River, near Lake St. John, Que. (A. H. Smith.) Drury's Cove, St. John, N.B. (Herb. Gray.) Near St. John, N.B., 1877. (Prof. Fowler.) Newfoundland. (La Pylaie, Herb. Gray.)

Var. **obtusa**, Bailey, Mem. Torr. Bot. Club, I., 36.

"Culm mostly shorter and even more slender; pistillate spikes much smaller (from $\frac{1}{3}$ in. long to smaller and globular), closely sessile; pistillate scale very obtuse, little if any more than half the length of the perigynium." Marguerite River, Que. (A. H. Smith, fide Bailey.) One small specimen received from Prof. Fowler, collected at Kennebecasis, N.B., June 30th, 1878, is this variety. The others are the type. (Macoun.)

Var. **major**, Bailey, Mem. Torr. Bot. Club, I., 36.

"Much stouter (often fully two feet high), the culm thick and very sharply angled; leaves stout and canaliculate or involute; staminate spikes short stalked; pistillate spikes one to five, mostly short-oblong, but often cylindrical (varying from $\frac{1}{3}$ to $1\frac{1}{2}$ in. long), stout and very dark and dull-brown, the lower one or two short-peduncled; scale varying from wholly obtuse to muticous." Lake Mistassini, N.E.T., 1885. (J. M. Macoun.) Jupiter River, Anticosti, Q., 1883. (Macoun.) Ungava Bay, Labrador, 1884. (Turner.)

Var. (?) **aurea**, Bailey, Mem. Torr. Bot. Club, I., 37.

"Taller and mostly stouter than the species; staminate spikes two to three, mostly long-peduncled; pistillate spikes one or two, the upper sessile, the lower short-peduncled, often staminate at the apex, yellow or stramineous; perigynium thin and yellow as in *C. monile*, mostly prominently few-nerved, gradually produced into a conspicuous and more or less toothed beak, broader and usually longer than the light brown or whitish mucous scale." Kennebecasis, N.B. (*Prof. Fowler, fide Bailey.*)

(2675.) **C. physocarpa**, Presl.; Macoun, Cat. IV., 169.

Springing along Spallumsheen Arm, at Sicamous, B.C., July, 1889. (*Macoun.*)

(2679.) **C. utriculata**, Boott; Hook. Fl. II., 221. (1840.)

References under *C. rostrata*, With., and its variety *utriculata*, Bailey, Part IV., 170, 171, belong here. Specimens referred here were collected in an immature state at Agassiz, B.C., May, 1889. (*Macoun.*)

(3200.) **C. exsiccata**, Bailey, Mem. Torr. Bot. Club, I. 6.

C. vesicaria var. *major*, Boott; Macoun, Cat. IV., 171, in part.

"Differs at once from *C. vesicaria* by its greater size and broader leaves, thicker and more nearly sessile spikes, and particularly by the much longer, lance-ovate, scarcely inflated, duller and strongly nerved perigynium, which is three or four times longer than the very narrow and mucous scale. In some of its forms it strongly suggests *C. trichocarpa*, Muhl., var. *aristata*, Bailey." Wet marshy places, near Victoria, Vancouver Island, 1885. (*Fletcher.*) Common and variable everywhere on Vancouver Island, 1887; on the mainland of British Columbia, from the coast to the Gold Range. (*Macoun.*)

Var. **globosa**, Bailey, Mem. Torr., Bot. Club, I., 7.

C. vesicaria var. *major*, Macoun, Cat. IV., 171, in part.

"More slender than the species, the leaves narrow ($\frac{1}{3}$ in. or less wide); spikes small (an inch or less long), more or less scattered, closely sessile, rusty in color; perigynium narrower, conspicuously spreading; scale hyaline and very small." Horne Lake, near Mount Mark, Vancouver Island, 1887. (*Macoun.*)

Var. **pungens**, Bailey, Mem. Torr. Bot. Club, I., 7.

C. vesicaria, var. *major*, Macoun, Cat. IV., 171, in part.

"Slender; spikes narrowly cylindrical (the size of a pencil) one to two inches long, usually dark colored; scales firm, very sharp-pointed, half or a third as long as the perigynium." Wet places at Cowichan, Nanaimo and Cameron Lake, Vancouver Island, 1887; common in swamps at Port Hammond, Agassiz, and eastward to Craigellachie, Eagle River, B.C. (*Macoun*.)

(2684.) **C. lurida**, Wahl.; Bailey, Mem. Torr. Bot. Club, I., 10.

References under *C. tentaculata*, Muhl., Part IV., 173, belong here.

(2687.) **P. Pseudo-Cyperus**, Linn., var. **Americana**, Hochst.; Bailey, Mem. Torr. Bot. Club, I., 54.

References under *C. Pseudo-Cyperus*, var. *comosa*, W. Boott, Part IV., 174, belong here.

674. PANICUM.

(3201.) **P. nitidum**, Lam., var. **barbulatum**, Michx.

Not uncommon at Kamloops and along the shores of Shuswap Lake, B.C. June, 1889. (*Macoun*.)

676. SPARTINA.

(2713.) **S. gracilis**, Trin.; Macoun, Cat. IV., 182.

Common in saline, boggy places at and around Kamloops, B.C., 1887. (*Macoun*.)

684. ALOPECURUS.

(2730.) **A. geniculatus**, Linn., var. **cæspitosus**, Scribner, MS.

A. Macounii, Vasey, Macoun, Cat. IV., 189 = *A. Howellii* and *A. saccatus*, Vasey.

"Culms low (2 to 6 in.): erect, panicles $\frac{1}{4}$ to 1 in. long, upper sheaths sometimes inflated."

"The spikelets are the same as in *A. geniculatus*, Linn. Perhaps a couple of *sub-varieties* could be made on the varying length of the leaves, but we do not carry matters that far in this country." (*Scribner*.) On the old waggon road, at the first tunnel, as it rounds the bluff at

Yale, B.C., May, 1889. We agree with Mr. Scribner in making this a var. of *A. geniculatus*. (*Macoun.*) Prof. Scribner remarks of var. *robustus*, Vasey, that it is just a stout grown plant of the species.

685. *ARISTIDA*.

(2736.) *A. fasciculata*, Torr.

A. purpurea, Nutt.; Macoun, Cat. IV., 190 = (*A. purpurea*, Nutt., var. = No. 336, Scribner, Montana Coll.)

Abundant at Spence's Bridge, B.C. 1889. (*Macoun.*)

686. *STIPA*.

(2739.) *S. Macounii*, Scribner, MS.

S. Richardsonii, Macoun, Cat. IV., 190.

"This is the *Stipa Richardsonii* of Gray's Manual, but I think not of Link. Your *S. Richardsonii*, var. *major*, is, I believe, *Stipa Richardsonii*, Link. I look upon the eastern plant, with its smaller panicle and spikelets, as a distinct species, and beg leave to name it *S. Macounii*." (*Scribner.*) This species includes all the references under *S. Richardsonii* in Part IV. (*Macoun.*)

(3202.) *S. Richardsonii*, Link.

S. Richardsonii, var. *major*, Macoun, Cat. IV., 191.

Not uncommon along the north shore of Shuswap Lake, near Scotch Creek, B.C., June, 1889. (*Macoun.*)

(2740.) *S. spartea*, Trin.; Macoun, Cat. IV., 191.

Abundant in many places on the hills around Kamloops and towards Nicola Lake, June, 1889. (*Macoun.*)

(2742.) *S. Columbiana*, Macoun, Cat. IV., 191.

Distinguished from *S. viridula* by its acute callus and short palea, this being scarcely half as long as its glume. (*Scribner.*) Not uncommon in tufts on the flats at Kamloops, B.C., June, 1889. (*Macoun.*)

S. — ? (No. 18.)

"This = 613, Tweedy, 1885, and referred by me to *S. viridula*, from which I now think it is distinct. Must study it more. Perhaps it is not separable from *S. Columbiana*." (*Scribner.*) My Yale specimens

referred in Part IV. to *S. Columbiana*, belong here, if this proves a distinct form. No. 18, of 1889, was gathered at Yale, B.C. (*Macoun*.)

(2738.) **S. comata**, Trin. & Rupr.; *Macoun*, Cat. IV., 190; No. 20 *Macoun*, 1889 = 338 *Scribner*; 201 M. E. Jones (Colorado); 49 Rusby (Arizona); 1625 Henderson (Oregon); and 37 Tweedy (Washington).

"Awn $5\frac{1}{2}$ inches long, flowering glumes with callus 7 inches long." (*Scribner*.) My No. 20 was growing in abundance in tufts on dry flats at Spence's Bridge, B.C., May, 1889. (*Macoun*.) "No 19 is the same species but the awns are only about 4 inches long, flowering glume including callus 5 inches long." (*Scribner*.) No. 19 was abundant in the same situation at Kamloops, B.C., June, 1889. (*Macoun*.)

687. ORYZOPSIS.

(2746.) **O. cuspidata**, Benth.; *Macoun*, Cat. IV., 193.

Abundant on the sandy soil just across Spence's Bridge (on the north side), B.C., May, 1889. (*Macoun*.)

689. MUEHLENBERGIA.

(2749.) **M. glomerata**, Trin.; *Macoun*, Cat. IV., 194.

Rather common in grassy thickets at Agassiz, B.C., July, 1889. (*Macoun*.)

693. SPOROBOLUS.

(2757.) **S. asperifolius**, Thurber; *Macoun*, Cat. IV., 197.

On saline flats south of Kamloops, B.C., June, 1889. (*Macoun*.) "Spikelets sometimes 2-flowered, second flower pedicellate and imperfect." (*Scribner*.)

(2758.) **S. cryptandrus**, Gray; *Macoun*, Cat., IV., 197.

On arid soil at Spence's Bridge, and at Trout Creek at the southern end of Lake Okanagan, B.C., July, 1889. (*Macoun*.)

694. AGROSTIS.

(2763.) **A. canina**, Linn.; *Macoun*, Cat. IV., 198.

Prof. *Scribner* says of this species: "This is *A. rubra*, Linn. May be called *A. rubra*, Linn., var. *Americana*. It is the same as *A. rupestris*,

Chapm. (non All.), found on Roan Mountain, North Carolina. The same plant grows on the White Mountains of New Hampshire (*A. canina*, var. *alpina*, Oakes) together with the true *A. rupestris*, All." (Scribner.) Our specimens from Mount Albert, Gaspé, Q., belong to *A. rubra*, var. *Americana*. (Macoun.)

(3203.) **A. Macounii**, Scribner, in Herb.

A. canina, Linn., var. *paleata*, Vasey; Macoun, Cat. IV., 198.

"Very distinct from *A. canina*, Linn. Probably a new species and will name it *A. Macounii*." (Scribner.)

(2764.) **A. exarata**, Trin.; Macoun, Cat. IV., 198.

Prof. Scribner says of No. 31 collected at Burrard Inlet and New Westminster, B.C., "one of the many forms (or species) referred to *A. exarata*, Trin., by American authors."

(2770.) **A. varians**, Trin.; Macoun, Cat. IV., 200.

Of specimens of this sent to Prof. Scribner, he writes—" '*Agrostis varians*, Trin. = 6054 Bolander.' This certainly does not equal 6054 Bolander, of which I have specimens, nor is it *A. varians*, Trin. It may be a small form of *A. exarata*, Trin." These specimens were from Queen Charlotte Islands. (Macoun.) Of others he writes—"not *A. varians*. Am not prepared to say what it is. I have the same from Oregon." These specimens were from Adams Lake, B.C. 1888. Collected by Dr. Dawson. Small specimens gathered on Mount Queest and Griffin Lake Mountains of the Gold Range, B.C., at an altitude of 6500 feet are doubtfully referred here by Prof. Scribner. (Macoun.)

(3204.) **A. humilis**, Vasey.

"Rootstock creeping, palea $\frac{3}{4}$ as long as its glume and a short naked prolongation of the rachilla." Mount Queest, altitude 6500 feet 1889. (*J. M. Macoun*.) Abundant on mountains north of Griffin Lake in the Gold Range, B.C. 1889. (Macoun.)

(2768.) **A. perennans**, Tuck.; Macoun, Cat. IV., 199.

Of Ottawa specimens, Prof. Scribner writes—" *A. perennans*, Tuck., but hardly of Gray's Manual; certainly *Trichodium perennans* of Ell."

697. CINNA.

- (2777.)
- C. pendula**
- , Trin., var.
- glomerata**
- , Scribner.

C. pendula, Trin., var. *acutiflora*, Vasey; Macoun, Cat. IV., 202.

Abundant around springs at Griffin Lake, Gold Range, B.C. 1889.
(Macoun.)

698. DEYEUXIA.

- (2781.)
- D. Canadensis**
- , Hook.; Macoun, Cat. IV., 204.

Prof. Scribner writes of Nos. 34 & 35—"Perhaps *C. Canadensis*; No. 34 = 482 E. Palmer (1887) from Utah; and more exactly a grass I have from the Cascade Mountains, collected by Mr. Frank Tweedy in 1882." No. 34 is from Kamloops; and No. 35 from mountains north of Griffin Lake, B.C. Alt. 6500 feet. 1889. (Macoun.)

- (2792.)
- D. rubescens**
- , Vasey; Macoun, Cat. IV., 207.

Our specimens, so called, are referred to *D. Suksdorfii*, by Professor Scribner. This species is therefore cancelled.

- (2795.)
- D. Suksdorfii**
- , Scribner; Macoun, Cat. IV., 207.

Rather common on rocky hillsides at Sicamous, B.C. 1889. (Macoun.)

- (3205.)
- D. chalybæa**
- , Fries. ?

Of No. 36, collected at Shuswap Lake and Spence's Bridge, B.C., 1889, Prof. Scribner writes: "No. 36^b = 357, Scribner. This grass seems to me distinct from *C. stricta*, Fries. Judging from descriptions it does not appear to differ from *C. chalybæa*, Fries."

701. DESCHAMPSIA.

- (2802.)
- D. atropurpurea**
- , Scheele, var.
- minus**
- , Vasey; Macoun, Cat. IV., 209.

Prof. Scribner says of this that it is "exactly like my European specimens ticketed *Vahlodea atropurpurea*. Certainly no variety."

- (2806.)
- D. elongata**
- , Munro; Macoun, Cat. IV., 210.

On dry spots, Cragellachie, Gold Range; on gravel at Penticten, south end of Okanagan Lake, B.C., 1889. (Macoun.)

703. TRISETUM.

(2809.) **T. canescens**, Buckl.; Macoun, Cat. IV., 211.

Not uncommon in thickets at Agassiz, B.C., May, 1889. (*Macoun.*)

(2810.) **T. cernuum**, Trin.; Macoun, Cat. IV., 210.

Not uncommon in thickets at Yale, on the Fraser, and Craigellachie, in the Gold Range, B.C. 1889. (*Macoun.*)

704. AVENA.

(2840.) **A. Smithii**, T. C. Porter; Gray, Man., ed. VI., 653.

"Closely allied to, but distinct from, *Melica aristata*. Neither of these can be referred to *Melica*, and they are no better classified when placed in *Avena*. *Bromelica* (Thurber as a section of *Melica*) might be raised to the rank of a genus, and made to include these and two or three other species which at present are evidently out of place in the genera to which they have been referred. Your No. 52 would then be *Bromelica Smithii*." (*Scribner.*) Rather common in damp thickets at Agassiz, B.C., May, 1887. (*Macoun.*) Prof. Scribner refers my No. 2840 (*Melica aristata*) to this species, so references under it are transferred here.

715. EATONIA.

(2832.) **E. obtusata**, Gray; Macoun, Cat. IV., 218.

Two forms of this species were collected: "(a) Culm slender, 40 cm. high, panicle 4 cm. long: green plant, with the aspect of *Koeleria cristata*, and may be named sub-var. *koelerioides*. (b) Culm 90 cm. high, panicle 15 cm. long, interrupted, dark purple." (*Scribner.*) The first form was gathered on the Indian Reservation at Kamloops, B.C.; the second at Griffin Lake in the Gold Range, B.C. 1889. (*Macoun.*)

(2833.) **E. Pennsylvanica**, Gray; Macoun, Cat., IV., 218.

Borders of ponds south of Kamloops, B.C., June, 1889. (*Macoun.*)

718. MELICA.

(2839.) **M. acuminata**, Bolander; Macoun, Cat. IV., 220.

Grassy thickets at Agassiz, B.C., May, 1889. (*Macoun.*)

(3206.) **M. spectabilis**, Scribner.

In a mountain valley, north of the Thompson River, between Spence's Bridge and Lytton. 1889. (*J. M. Macoun.*)

723. POA.

(2859.) **P. Eatonii**, Watson ?; Macoun, Cat. IV., 225.

On the mountains at Spence's Bridge, B.C., 1889. This is the same species referred to *P. Californica* in Part IV. There is still doubt where this should go. (*Macoun.*)

(2863.) **P. laxa**, Hænke; Macoun, Cat. IV., 225.

Quite common on the mountains north of Griffin Lake, Gold Range, B.C. Alt. 6500 feet. 1889. (*Macoun.*)

(2868.) **P. Nevadensis**, Vasey; Macoun, Cat. IV., 226.

On the mountain side at Yale, at Spence's Bridge, and at Kamloops, B.C. 1889. (*Macoun.*)

(2870.) **P. purpurascens**, Vasey; Macoun, Cat. IV., 226.

Summit of the mountains north of Griffin Lake, B.C. Alt. 6500 feet. 1889. (*Macoun.*)

(2873.) **P. stenantha**, Macoun, Cat. IV., 227.

Prof. Scribner writes me that my specimens of this species are his *Poa Vaseyana*, var. *angustifolia*, Tweedy, 1885. It is not *P. stenantha*, R. Brown.

(2873.) **P. subaristata**, Macoun, Cat. IV., 227.

Of this Prof. Scribner writes—"I have in my herbarium no *P. subaristata*. Your grass is the same as 631 Tweedy (1885 Yellowstone Park Coll.) which I referred doubtfully to *Poa andina*, Nutt. I collected in Montana exactly the same form. Nuttall never published his *Poa andina*. I have never seen and do not know *Poa andina*, Trin. Your grass belongs to a section of the genus not well understood, and one represented by many forms in the Rocky Mountains. The grass you sent me ticketed *Poa andina*, Nutt., var. *purpurea*, Vasey, is like the type of *Poa andina*, Nutt., in Nuttall's writing in herb. Phila. Acad. Nat. Sciences."

We have still a few *Poas* undetermined, and hope to have them settled during the coming year.

727. SCOLOCHLOA.

(2883.) **S. festucacea**, Link.; Gray, Man., ed. VI., 666.

Flumina arundinacea, Trin.; Macoun, Cat. IV., 229.

Abundant in a marshy meadow, five miles south of Kamloops, B.C.
1889. (*Macoun.*)

728. GLYCERIA.

(2886.) **G. grandis**, Watson; Gray, Man., ed. VI., 667.

G. arundinacea, Kunth.; Macoun, Cat. IV., 230.

Quite common in marshy meadows, five miles south of Kamloops, B.C. 1887. (*Macoun.*)

(2888.) **G. distans**, Wahl., var. **alroides**, Vasey; Macoun, Cat. IV., 231.

Abundant on the borders of saline marshes at Kamloops, and sparingly at Spence's Bridge, B.C. 1889. (*Macoun.*)

729. FESTUCA.

(3207.) **F. subuliflora**, Scribner MS.

F. occidentalis, Macoun, Cat. IV., 235.

Prof. Scribner writes of this—"This (No. 7) is believed to be *F. subulata*, Bong. by Prof. Hækel, but it does not agree so well with his description of that species as your No. 89 (of this year.) It = 1171 and 1367, Henderson, and No. 19, Howell, in my herbarium. Note that the branches of the rather short panicle are all solitary, that the curved callus of the following glume is remarkably long and is covered with a few short stiff hairs, that the edges of the flowering glume are ciliate with a few scattered hairs near the base, and that the joints of the rachilla are also ciliate-scabrous. The panicle branches are shorter than in your No. 89, the leaves are shorter, of much firmer texture and pubescent on the upper surface. I will name this grass provisionally *F. subulifolia*." This is the Vancouver Island plant.

(3208.) **F. subulata**, Bong. ? No. 89 of 1889.

"Panicles nodding, the long and slender lower branches in pairs; callus much shorter than in No. 7, and with the joints of the rachilla simply scabrous. Flowering glumes 3-nerved. In No. 7, the flowering

glumes are 5-nerved, the intermediate nerves, however, indistinct, excepting when the glumes are moistened and viewed by transmitted light." (*Scribner*.) In thickets at Agassiz, B.C., on the mountain side, 1889. (*Macoun*.)

(2904.) **F. occidentalis**, Hook.; *Macoun*, Cat. IV., 235.

On rocks, North Arm, Burrard Inlet, B.C., April 30, 1889. (*Macoun*.)

(2907.) **F. rubra**, Linn., var. **longearistata**, Hack. in herb. *Scribner*.

"Your No. 88 is this variety, and is apparently the same as 15 of Howell, named by Dr. Vasey *F. ovina*, L., var. *polyphylla*.

No. 87 is very near No. 88, but possibly distinct." (*Scribner*.)

No. 87 is from Shuswap Lake, and No. 88 from Yale, B.C.

730. BROMUS.

(2914.) **B. Hookerianus**, Thurber; *Macoun*, Cat. IV., 238.

In thickets at Agassiz and Spence's Bridge, B.C. 1889. (*Macoun*.)

(2925.) **B. TECTORUM**, Linn.; *Macoun*, Cat. IV., 240.

Introduced in meadows and cultivated fields at Spence's Bridge, B.C. 1889. (*Macoun*.)

736. ELYMUS.

(3209.) **E. nitidus**, Vasey, Bull. Torr. Bot. Club, XIII., 120.

"Culms $2\frac{1}{2}$ to 3 feet high, rather stout and leafy, sterile shoots half as long; leaves erect rigid, scabrous, 6 to 8 inches long, 2 to 3 lines wide, slender pointed; ligule nearly obsolete; sheaths scabrous; spike about 4 inches long, erect; spikelets 1 to 2 at each joint, three to five-flowered; empty glume 6 to 7 lines long, including the awn, the upper one five-nerved, lower one three to four-nerved, scabrous on the nerves; flowering glume about 5 lines long, with a fine scabrous awn of equal length, obscurely five-nerved, smooth or nearly so, punctulate and shining; palea a little shorter, ciliate-scabrous on the nerve. The spike is less thick than in *E. Virginicus*, and more compact than in *E. striatus*." (*Vasey*.) Quite common in damp thickets at Agassiz, Yale and Shuswap Lake, B.C. 1889. (*Macoun*.)

(2948.) **E. Macounii**, Vasey, Bull. Torr. Bot. Club, XIII., 119; Macoun, Cat. IV., 246.

"Culm 2 to 3 feet high, smooth, leaves of culm 3 or 4, rigid, erect, narrow, scabrous, 3 to 6 inches long; ligule short and truncate; spike slender, erect, cylindrical 3 to 5 inches long; commonly in slender specimens there is but one spikelet at each joint of the rachis, in stronger ones the lower spikelets are in pairs and the upper ones single; frequently some of the spikelets have three glumes, even some of the double ones, i.e., one glume on each side and one in front. Spikelets one to three-flowered, empty glumes linear-lanceolate, rigid, scabrous, mostly three-nerved, 3 to 4 lines long, and running into an awn as long or longer; flowering glumes oblong-lanceolate, punctulate below and scabrous above, 4 or 5 lines long, with an awn as long or longer, five-nerved; palea equalling the glume, obtuse." (*Vasey*.) In tufts on dry hillsides and in hollows, at and around, Kamloops, B.C., 1889. (*Macoun*.) "These specimens differ from the type only in their pubescent lower sheathes and leaves. Axis of spike articulated." (*Scribner*.)

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